THE IRON AGE

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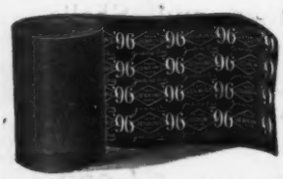
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THE IRON AGE

New York, Thursday, November 19, 1908.

A Large Material Handling Plant.

The Use of Traveling Bridges in Building a River Lock.

Several years ago the Government planned to replace Lock No. 5 on the Monongahela River with a larger structure, and a point was selected at the town of Brownsville, Pa., where a good rock bottom was found.

Traffic could not be interrupted as 8 ft. of water is maintained, for navigation, to Morgantown, and means for handling material had to be such that only that part of the river to be occupied by the lock could be covered. Cableways, derricks, and other means were considered, the former on account of their low first cost, but their adaptability was not as great as the necessity required. A hoisting and conveying machine was needed that would have lateral motion the length of the proposed lock walls, and after considering all plans a traveling bridge with trolley was adopted. The scheme was conceived by John Seaver, engineer for H. E. Talbott & Co., contractors, the

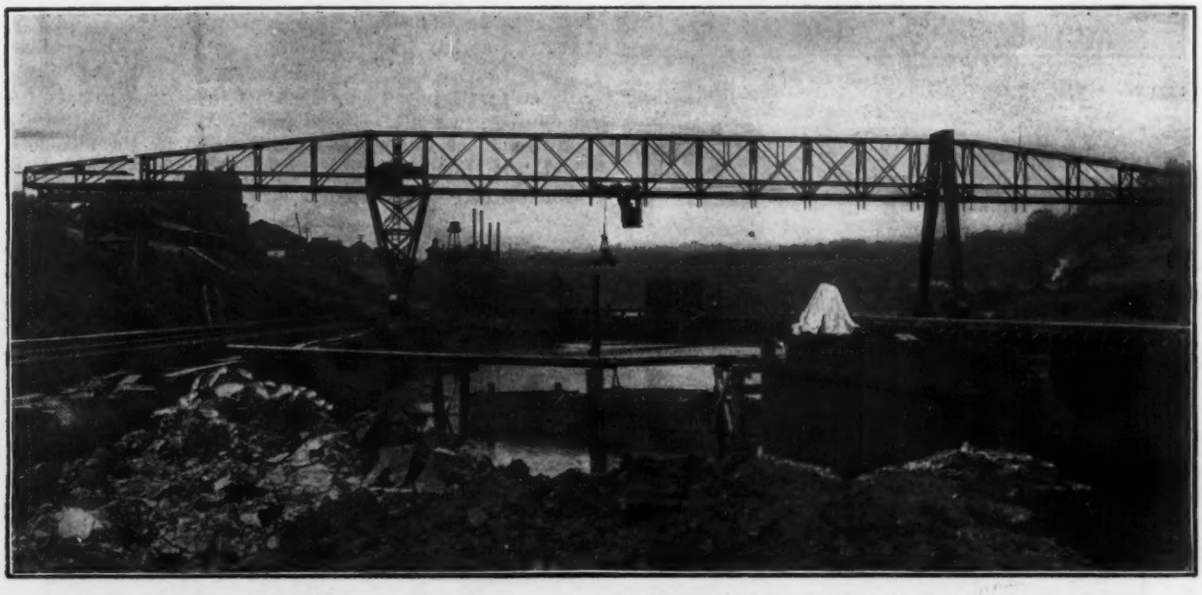


Fig. 1.—A View of the Traveling Bridge Used in Excavating, Showing at the Left the Switch for Transferring Trolleys Between Bridges.

design executed by the McGeorge Engineering Company, Cleveland, Ohio, and the contract for building and erecting was awarded to Victor R. Browning & Co. of the same city.

The contract was let in December, 1907, and two bridges were built and erected on tracks set on piling at the location of the lock, and in running order by April, 1908. This time included all drawings, shop work and erection, the piling and tracks having been placed in the meantime. One bridge was set to excavating, and is shown at this work in Fig. 1; the other to laying concrete, and it was estimated that they would displace 500 men. The excavated material was piled on the river side, and at the ends, to form cofferdams, but there was about 17,000 cu. yd. to be dumped in scows to be carried away.

The main features of the machines are two towers, each carried on six flanged wheels with axles in M. C. B. boxes, connected by a bridge with cantilever sections. Each bridge carries one or two trolleys, depending on requirements, which can be transferred by running them off on a trestle on the bank, which may be seen at the left in Fig. 1. An extension of 27 ft. can be bolted to either bridge for operations beyond the reach of the main cantilever on the shore end. The fabricated material of the bridges, trolleys and towers include 450 tons of structural steel, and about 28 tons of cast iron, and 12 tons of steel castings.

The bridges have a span of 150 ft. from center to center of rails, and a hight in the clear of 32 ft., and are propelled by a winding cable attached to each end of the tracks and carried up, and over, to drums on the shore tower. The mechanism consists of two motors of 50 hp. reduced by a train of two gears to a 6-ft. drum, giving a traveling speed of 150 ft. per min., and adding a weight of 20 tons to the shore tower, which is designed somewhat differently from the other one. By placing the propelling mechanism on this tower it afforded an opportunity to construct lighter trusses for the trolley tracks. The bridges are 285 ft. long, which give a trackage of nearly that length for the trolleys, and by adding the temporary section an addition of 27 ft. is gained. The bridges were designed to lift 5½ tons, and the trolleys are equipped with a 50-hp. motor for the hoisting rig, of 5½ tons capacity, and a 30-hp. motor for traveling at a rate of 150 ft. per minute.

One trolley is being used with a 1¼-yd. orange-peel bucket in excavating and has operated at the rate of 50 trips per hour as the fastest time. The operators work in 8-hr. shifts, beginning at 6 a.m. and continuing to 2.45 p.m., with 45 minutes for lunch. The trips with the bucket have varied from 276 to 409 in that time. This trolley is also used to set timbers and do other odd jobs. This leaves the other crane free to set forms and handle concrete.

The piling on the river side is arranged to carry three rails for the tracks of the concrete mixing plant, and the car which brings the cement from the storage bins on shore. This car has a capacity of 15 barrels, and is self propelling, having a 5-hp. motor and a speed of 8 miles per hour. Scows of sand and gravel are tied up under the cantilever over the river and one trolley, shown in Fig. 2, operates a grab bucket supplying the mixing plant with material. The capacity of the storage bins at the mixing plant is 15 tons of gravel, the same of sand and 20 barrels of cement. The output when working steadily is 60 cu. yd. of concrete per hour.

One plant, which also may be seen in Fig. 2, consists of a No. 5 Smith mixer, electrically driven, which dumps the batches into a hopper, from which it is dumped into a specially designed bucket, shown in both Figs. 2 and 3, that waits for a second batch before depositing at the

Fig. 2.—A View at the Outer Tower of the Other Bridge, Showing the Concrete Mixing Plant.

required place on the walls. This bucket is carried by a second trolley on the same bridge.

Three walls are being built, the shore one 23 ft. thick at the bottom, and tapering on the bank side to 6 ft. at the top, and 42 ft. high; the middle wall is 20 ft. thick at the bottom, 20 ft. at the top, and is 45 ft. high, while the river wall is 22 ft. at the bottom, 16 ft. at the top, and 47 ft. high. The lengths vary, the shore wall being approximately 1150 ft. long, the center wall 520 ft., and the river wall 650 ft. long, and the three walls give a clearance in each lock of 56 ft. wide. Stone abutments are to be built at four points connecting the shore wall with the bank, and also two heavy concrete wings on a line of the end of the center wall. These wings extend into the river bank, and the material on the cofferdams will be dumped between them. A dam is to be built opposite the lock after the latter is finished, to allow the passing of boats.

The bridges will be used till the fall of 1909, though one may be removed before that time to another job. The structural work is put together with bolts driven in reamed holes, so that the task of dismantling will not be a very great one, and the length of usefulness will be greatly extended.

The Fitchburg Co-operative Industrial School.

A statement recently sent out from the office of the Superintendent of Schools, Fitchburg, Mass., has the following concerning the progress made with the co-operative industrial course of the Fitchburg High School, which was described in *The Iron Age* of September 24, page 857: The course was started the last week in August, when the boys went to work in the shops. The school course opened September 8, at the beginning of the regular school year. Twenty boys are enrolled, divided as follows: Two pattern making, two drafting, and 16 machinists. The manufacturers have expressed great satisfaction with the plan, some of them saying at this early day that these boys are superior to those formerly employed. They are boys who have their eyes and ears open, who think and ask questions of an intelligent nature. In addition to the regular school work an "industrial society" has been organized for mental and social advancement. This meets once a month and is conducted by the boys themselves. It is planned to have the manufacturers and others give talks of an instructive nature, to be followed with discussion by the members, and from time to time a social affair will be given, to which others than members may be invited.

The gold output of the Transvaal mines in October established a new high record at 617,744 fine ounces, valued at $13,127,000. The previous high record was 587,813 fine ounces, in August. The product of October, 1907, was 553,553 fine ounces, valued at $11,756,000. The value of last month's output was over twice the average of the totals for October, 1904 and 1903, which were $6,915,000 and $6,043,000 respectively.

Fig. 3.—The Shore Tower Ends of Both Bridges, Showing the Trolley Propelling Mechanism and the Concrete Bucket.

The Marvel Portable Grinding Attachment.

Because of the present importance of grinding machines in metal working shops, and the wide scope of operations in which they are now employed, the No. 1 Marvel portable grinder just brought out by the Armstrong-Blum Mfg. Company, 104 North Francisco avenue, Chicago, Ill., is of timely interest. It was aimed to make it efficient and capable of extending the range of work possible on lathes and planers, to both of which it

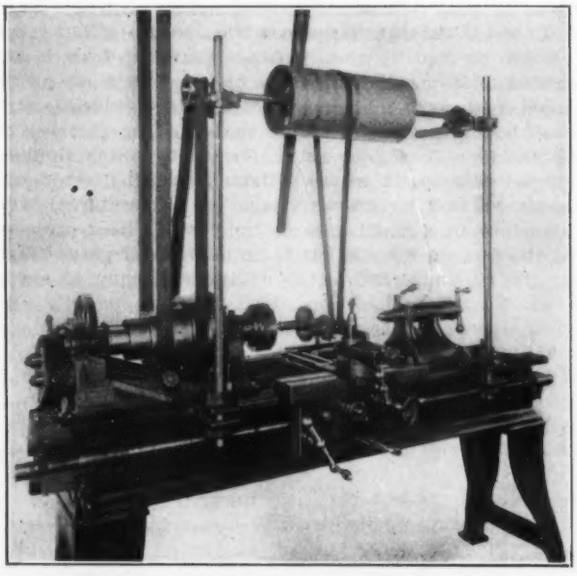


Fig. 1.—The Marvel Grinding Attachment Applied to a Lathe.

may be conveniently attached. The manner of attaching it is plainly shown in Figs. 1 and 2, in the former of which it is mounted on a lathe and in the latter on a planer.

In Fig. 3 parts of the grinder are shown unassembled. Attached to the grinder head A with a clamp bolt is a steel shank, by which it is secured in the tool post of the machine. This shank is 9-16 x 1⅛ in. and of sufficient length to permit of necessary tool post adjustment. The

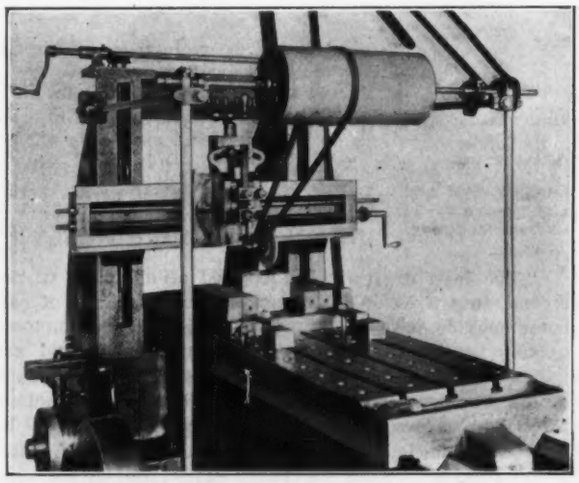


Fig. 2.—The Attachment as Used on a Planer.

wheel and pulley spindle is mounted in bronze dustproof bearings provided with dustproof oil cups, and perfect adjustment of the arbor shaft is maintained by screws set in the head to take up wear. Wheels up to ½ x 6 in. are carried by the spindle and are secured by a ⅜-in. clamp screw in the end of the spindle; the latter is driven by a 1-in. belt over a 1½ x 1 in. pulley. An extra extension spindle, B, is supplied for internal grinding, and an adjustment gauge, C, designed for use in grinding milling cutters and reamers, &c., completes the grinder head fittings. The part D is a section of the frame supporting the drum pulley from which the grinder is driven.

When used with a lathe the upright posts are attached to the outside runway of the lathe bed by bolt clamps. The uprights are 1⅛-in. polished steel rods, 4 ft. long, and are adjustable to any hight by using the thumb screws in the clamps. Horizontal arms 1⅛ in. in diameter by 17 in. long, clamped to the uprights, support the drum shaft bearings. These bearings are ball shaped and are held in hinge clamp sockets, one of which is shown on the horizontal arm of the frame, section D. This form of bearing admits of flexibility that makes close adjustment of the drum shaft, either vertical or horizontal, unnecessary. Swinging the arms to right or left or raising one slightly higher than the other will not destroy the alignment of the shaft bearings. This greatly facilitates the setting up of the attachment and removing it from one tool to another, since careful leveling and adjustment are not required.

As a lathe attachment the grinder is supplied with as

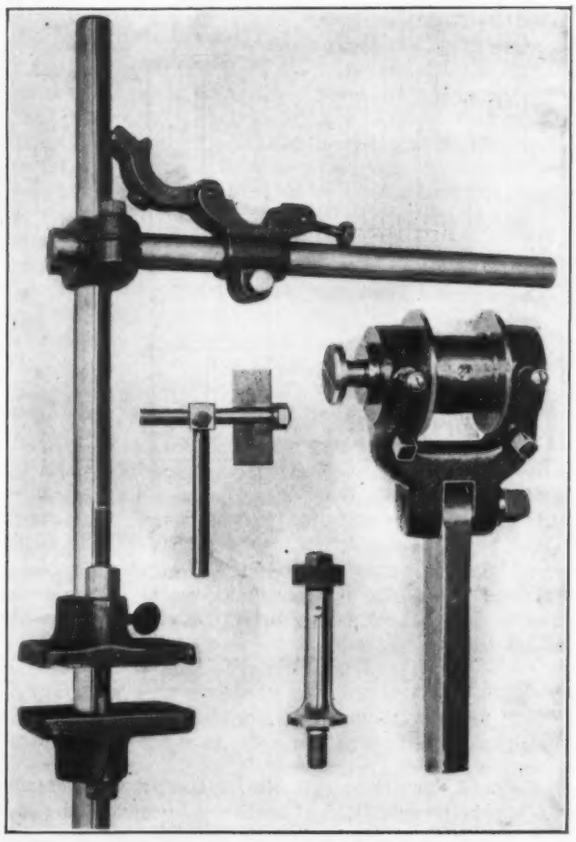


Fig. 3.—Parts of the Marvel Grinding Attachment Made by the Armstrong-Blum Mfg. Company, Chicago.

many speed changes, less one, as there are steps on the lathe cone pulley. The tool is driven from the large step of the cone through a 3 x 2⅛ in. flanged pulley on the end of the drum shaft. Thus, on a five-step cone lathe four speed changes are available for the grinder. The drum pulley, 20 in. long by 9 in. in diameter, is made of galvanized sheet steel, with malleable iron heads, and is secured to the shaft at each end by two large clamp nuts; it may be shifted along the shaft to any point required to accommodate the position of the grinder on the lathe bed.

By referring to Fig. 2 it will be noticed that, when applied to a planer, the position of the frame posts are reversed; that is to say, the uprights are here used as horizontal arms and are clamped to the sides of the planer housings, while the bars rest upon the floor. In this position the drive may be taken from a pulley on the planer countershaft. Being clamp bolted on the shank, the grinder head is readily tilted to accommodate the requirements of service as a planer attachment.

The weight of the entire attachment is about 100 lb.

The Baillot Heat Recovering Cupola.

The *Proceedings* of the American Foundrymen's Association for the convention of 1908 have just been published. They give in full the discussion had at the Toronto meeting on the Baillot cupola, from which it appears that the melting of iron in this cupola at the meeting created very general interest in the claims made for it, while it left the participants desirous of obtaining further data as to possible economies. The system has been used in a considerable number of foundries in France and Belgium, and has been introduced in Montreal, Canada, but has not yet been put in operation in the United States. The inventor, A. Baillot, a Belgian engineer, set out to utilize as far as possible the waste heats of foundry cupolas, and the claims of fuel economies resulting from the use of the system range from 15 to 30 per cent. The theory on which the construction of the Baillot apparatus is based is embodied in the following statement

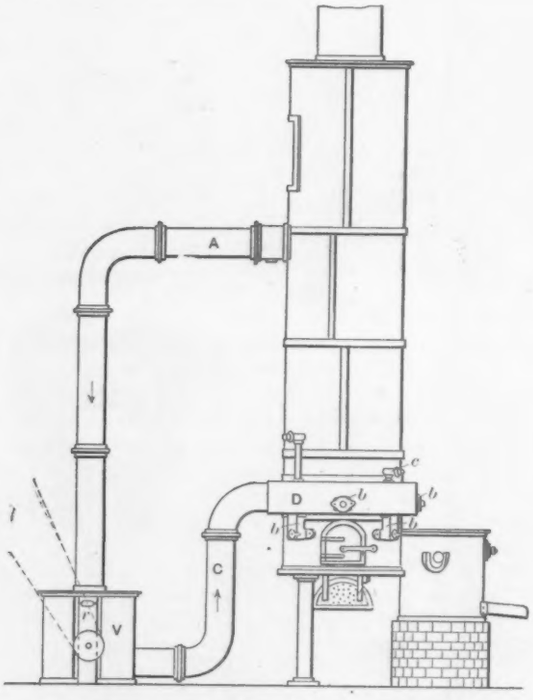


Fig. 1.—The Baillot Heat-Recovering Cupola.

of the conditions most suitable for the proper operation of a cupola, as submitted at the Toronto convention:

1. Distribute the blast through several rows of tuyeres along the full hight of the bed with a view to securing as complete and perfect a combustion as possible of the fuel and of the combustible gases, taking care to make the cross section of the upper tuyeres much smaller than that of the lower ones, so as to avoid sending an excess of air into the upper strata of the melting zone.

2. See that the position of these tuyeres varies according to the nature of the fuel, according to its degree of average humidity and according to its size, always bearing in mind at the same time that any fuel will always act with regard to the blast in the same manner as if it were all composed of pieces of the smallest size it contains; also, that anthracite and dense cokes will have a deoxidizing power considerably inferior to that of light porous cokes.

3. Mix in with the blast a stated amount of gases subject to being deoxidized by carbon at a high temperature, such as steam or carbonic gas. This will prevent the temperatures becoming excessive at points where the combination is most active, and so preclude the possibility of burning the iron; it will also transfer any excess of heat existing around the lower row of tuyeres to the upper strata of the melting zone, and in particular to that part of the fuel bed immediately in contact with the metal. It will secure also the thorough combustion of the whole mass of fuel.

The suggestions in the first and second paragraphs of the above are more or less familiar, upper tuyeres having been in use for a good many years. The novelty of the Baillot system is represented by the third paragraph, which refers to the introduction with the blast of carbon-monoxide, carbon-dioxide and steam, by the return to the tuyere zone of gases given off at the top of the cupola. The construction is indicated in Fig. 1, and the arrangement of the tuyeres and the "recuperating ring" is shown in Fig. 2. The method by which heat is utilized that with the ordinary construction would be waste is explained as follows:

"At points where combustible gases are taken off is a circular chamber imbedded in the brickwork. External openings, *d*, are provided here to admit air supply which, upon being circulated in the chamber, is warmed from the heat of the cupola that otherwise would have been lost. Through the pipe A the mixture of hot gases reaches the fan V, where another quantity of air is admitted to insure the necessary blast. This fresh air is supplied through the damper *r*. The blast, which is still very hot, is now delivered to the collecting chamber D by the pipe C. By-passes, *h*, formed by piling suitably shaped castings, R, insure a thorough mixing of air and gases as well as the exchange of temperatures. Obviously such a contrivance entirely avoids back pressure at the furnace top. Below is an analysis of gases taken in the inlet pipe before the additional supply of air is

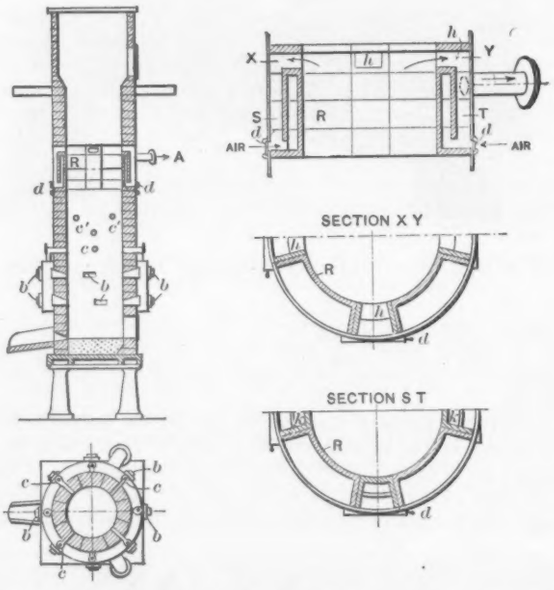


Fig. 2.—Sectional Views Showing the Arrangement of Tuyeres and the "Recuperating Ring."

made. The average analysis, as shown, for the mixture is as follows:

	Per cent.
Carbonic acid gas	8
Oxygen	11.5
Carbon monoxide	2.5
Nitrogen.	

"The inlet draft having a speed of about 14 ft. per second, in a 9 2-3 in. diameter pipe, about 42 lb. of carbon-monoxide pass hourly. That weight of carbon-monoxide when burnt and changed into carbonic acid gas yields 39.064 calories, and it being assumed that a pound of ordinary cast iron requires 131 calories to be melted, the heat recovered in an apparatus dealing with 2400 lb. hourly is sufficient for the melting of 300 lb. of metal without any fuel being spent; the saving amounting to 12 per cent.

"As the production of carbon-monoxide cannot be entirely avoided among the layers above the tuyeres *b*, it was thought advisable to burn as much of it as possible without interfering with any of the other fittings, or with the working of the cupola, and more especially with the ease of management. Accordingly, additional tuyeres, *c* and *c'*, spaced on two superposed rows alternating respectively from one line to the other have been provided for above the so-called 'melting' tuyeres *b*. When delivered by the 'burning,' or upper, tuyeres, the blast burns a part of the carbon-monoxide that is passing in front of them in places where the heat is not great enough to

bring coke to an incandescent state. Considerable care must be taken when choosing a suitable place for the tuyeres in order to fulfill the above condition, though the temperature must still be high enough to allow of an immediate lighting up of the hot carbon-monoxide when it meets free air. The heating and melting tuyeres are supplied with air delivered by the fan, through pipes from the blast collecting pipe D. The generation of fresh carbon-monoxide is thus avoided. The upper row of tuyeres *c'* is only used when the high temperature space extends too high.

"The advantage of the use of 'burning' tuyeres is especially felt when lighting up, enormous quantities of carbon being evolved. The consumption of fuel is then considerably diminished. Further, the burning tuyeres widen the burning space and aid in the melting of metal that takes place lower down, this being much more easily accomplished. It is further hastened through the space where the lower tuyeres are situated, being hotter than usual, as the induced blast is warm. Drops of metal fall warmer in front of the melting tuyeres and quickly leave that part of the cupola, which is at the ordinary temperature. They collect at last in the crucible at a very high temperature, and the metal is much more fluid than is usual, slags are more easily separated and metal more easily cast. Fig. 1 is a general view of an apparatus with a receiver; two rows of melting tuyeres, *b*, and two rows of burning tuyeres being used. All tuyeres and air supplies can be regulated through the openings *d* and the damper. Owing to the blast being hot and the high temperature around them, the nozzles of the melting tuyeres are less liable to get choked."

In the discussion of the Baillot cupola before the American Foundrymen's Association, the point was emphasized that the process does not aim so much at using carbon-monoxide over again as at preventing its production as far as possible by giving more perfect combustion in the melting zone. It was granted that it is possible to obtain good combustion in any ordinary cupola, properly constructed and properly run, by using two rows of tuyeres, but the upper tuyeres are often blocked by the rapid accumulation of slag. The return of the gases to the melting zone is calculated also to prevent the burning out of linings and the consequent obstruction of tuyeres.

There was some disposition on the part of foundrymen taking part in the discussion to question the value of introducing at the tuyeres steam and carbonic gases for the purpose of taking away heat there and increasing it farther up. It was argued that the tuyere region is the place where heat is needed. To this it was replied that the gases returned from the top of the cupola operated to drive some of the heat toward the center of the bed where less air penetrates under ordinary circumstances and thus an equalizing action was secured. Some point has been made also of the oxidizing action at the point where the vapor in the returned gases is separated into oxygen and hydrogen. How far the liability of the molten iron to take up oxygen may detract from the advantages of the process is the question raised in this connection.

Customs Decisions.

Iron Ore.

The Board of United States General Appraisers adjudicated, November 7, a customs dispute between the Government and the Prince Mfg. Company and others of New York, regarding the classification of merchandise alleged to be iron ore. The collector of customs took the position that the merchandise should be classified for duty at the rate of 30 per cent. under the tariff provision for "crude hematite ore." The importers, on the other hand, set up the contention that the product must be considered "iron ore," with a tax of 40 cents per ton. There has been a great deal of litigation on this question. General Appraiser McClelland, who writes the decision for the board, says that inasmuch as the United States Circuit Court of Appeals has decided this question in favor of the importer in a test case, it is incumbent upon the board to sustain the protest in the case at bar. The decision of the collector is accordingly reversed.

Bobbins for Spinning Machines.

It was decided last week by the Board of Appraisers that additional bobbins of wood imported with spinning machines cannot be regarded as integral parts of the machines. M. A. Graser Rothe, Cincinnati, Ohio, was the importer. It appeared that, while the bobbins accompanied the machines, they were packed and invoiced separately. The protest was against the assessment of duty on these bobbins of wood as parts of the machines at the rate of 45 per cent. under the provision in the tariff for "manufactures of metal." The importer claimed that the bobbins, of which there were 1000 to each machine, should be held to be dutiable as "manufactures of wood," with a tax of only 35 per cent. In sustaining the contention of the importer General Appraiser Fischer says it is evident that they (the bobbins) do not constitute with the machine a dutiable entirety and that they should not be classified together with the machines as units.

Steel Points for Electrical Machines.

Steel points intended for use as conveyors of electricity in an electrical machine, for the treatment of the scalp and skin, have been decided by the board not to be "needles" within the meaning of that word as used in the tariff act. Henry Paulson & Co., Chicago, the importers, opposed the classification of the articles as "manufactures of metal," with a duty of 45 per cent. Instead, the firm alleged that the points should be deemed "needles," for the purposes of leving duty. The merchandise consists of so-called needles measuring 30 mm. in length, and similar in general appearance to the ordinary sewing needles, with the exception that they do not possess an eye to carry a thread. In denying the contention of the importers General Appraiser Fischer has this to say: "The articles are, in fact, steel points. They are not made to carry a thread and are not needles as that term is used in the tariff law, and in the absence of evidence to show that they are articles made from round steel wire, we must overrule the protest on all grounds."

Rifle Barrels.

The differences between the Government and importers, of forged rifle barrels, rough bored, concerning the classification of these articles, will be brought into court shortly. Several weeks ago the Board of Appraisers, in passing upon the question, decided that the rifle barrels are entitled to enter this country under the tariff provision for "rifles and parts thereof," with duty at 25 per cent. The custom house authorities had assessed the articles at 45 per cent., alleging that the barrels are, in fact, manufactures of metal as specified in the revenue law. The Treasury Department now announces that it will not accept the decision of the board as final, and an appeal is directed to be taken to the courts. It is said that domestic manufacturers of rifle barrels persuaded the Government to take an appeal, in view of the low rate of duty found by the Board of Appraisers to accrue on the foreign products.

Routine decisions have been handed down by the board as follows: Davies, Turner & Co., Boston, steel tubes, protest sustained. Edgar T. Ward and Sons, Boston, steel in strips, protest sustained. Hermann Boker & Co., New York, cold rolled steel, smoothed only, protest upheld.

A patent has been granted to Julius H. Meissner, Pittsburgh, on a blast furnace construction which is offered as a preventive of hanging and slips and the resultant explosions. With a view to preventing choking of the burden and to secure a positive feed at the bosh, the inventor proposes to make this section of the furnace rotatable. The upper portion of the stack is to be carried on columns in the usual way. For the separate support of the bosh a circular structure of I-beams is provided, the beams being carried on brackets projecting from the columns. On this structure it is proposed to mount a heavy circular bedplate with guides for antifriction rollers, the latter carrying brackets which are secured to the bosh. The inventor has not been connected with blast furnace operations, but has patented devices in several other mechanical lines.

Trade Publications.

Core Prospecting Drills.—Birdsboro Steel Foundry & Machine Company, Birdsboro, Pa. Catalogue, 6 x 9 in.; 39 pages. The company's line of diamond pointed drills is described and illustrated in this volume and parts of the machine are shown. Space is given to drills specially adaptable for artesian well boring and diagrams illustrating the performance of the company's core drills are shown.

Manganese Steel Products.—Taylor Iron & Steel Company, High Bridge, N. J. Booklet and circulars. The first contains a condensed list of the company's line of steel castings, including car wheels, centrifugal pump parts, jaw crusher parts, &c. The circulars concern special products of the company. One is devoted to a special tooth for steel shovels and another covers manganese steel ball mill and Kominuter plates.

Spiral Riveted Pipe.—American Spiral Pipe Works, Chicago, Ill. Catalogue No. 5, 8 x 10½ in.; 78 pages. Numerous illustrations of installations of the company's spiral pipe and flanges are shown in this volume, and some material heretofore issued in pamphlet form is included. An interesting illustration is that of an installation of the company's pipe in a refrigerating plant, showing the pipe, after five years of constant service in carrying brine, in as good condition as when it was installed. Profile maps of pipe installations are included, and some special sheet steel fittings are illustrated. Gaskets, sluice gates, gate valves, foot valves, boiler flanges, &c., are illustrated and price-lists and useful tables are given.

Horizontal Boring and Milling Machines.—Fosdick Machine Tool Company, Cincinnati, Ohio. Circular. Gives description and specifications of the No. 0 horizontal boring, drilling and milling machine described in *The Iron Age* January 10, 1908. A half-tone illustration of the machine and sectional drawings are included.

Metallic Packing.—C. Lee Cook Mfg. Company, Louisville, Ky Brochure. The company's line of metallic packing is shown and its application to piston rods, valves, &c., is illustrated. A list of users is given.

Heating Furnaces.—Model Heating Company, Philadelphia, Pa. Pamphlet. The Model furnaces for heating are shown in several types, including square and round furnaces, and the illustrations include sectional views of the more important types of the company's manufacture.

Boring and Turning Mills.—Gisholt Machine Company, Madison, Wis. Loose leaf. Shows the company's standard type of vertical boring and turning mills and describes the machines.

Generators.—Northern Electrical Mfg. Company, Madison, Wis. Bulletins and leaflets. No. 55 treats of the type L engine-driven generators and states facts covering the use of the machines. No. 56 describes the company's type B belted motors and generators, which are built in a range of sizes and speed to meet all commercial requirements. Leaflet No. 151 deals with a motor-driven wood-turning lathe; No. 152, with Northern-Davidson ventilating fans; No. 153, Northern motors in furniture making, and No. 154 with Northern electric emery grinders.

Engine Lathes.—Hendey Machine Company, Torrington, Conn. Catalogue, 6 x 9 in.; 112 pages. The company's line of lathes is fully described and illustrated, and samples of work done by some of the machines are shown, together with their various attachments. Space is given to lathe and drill chucks, threading tools, &c., and the lathes shown include motor-driven lathes, engine lathes in a number of types, turret lathes, &c.

Central Station Transformers.—Wagner Electric Mfg. Company, St. Louis, Mo. Bulletin No. 81. Gives a complete and illustrated exposition of the company's central station transformers.

Condensers, Air Pumps, Feed Water Heaters, &c.—Wheeler Condenser & Engineering Company, Carteret, N. J. This is the first of a series of engineering treatises outlining this company's products, and is numbered 101. It refers to the Wheeler admiralty surface condenser, Wheeler jet and barometric condenser, Wheeler-Edwards patent air pump, Wheeler-Volz combined condenser and feed water heaters, vertical engines, centrifugal pumps, dry vacuum pumps, &c. Useful and practical tables on condensing work are given, with other information.

Machine Tools.—Manning, Maxwell & Moore, Inc., New York. Catalogue, 10 x 13 in.; 1174 pages. This is a volume 2½ in. thick, embracing the company's full line of machine tools, and can almost be called an encyclopedia of machine tools. Attention is called in the introduction to the fact that the development of high speed steels and the application of motor drive has necessitated a redesigning of the general line of machine tool equipment, and to make the catalogue up to date it has been necessary to use new halftone illustrations throughout. There is a general table of contents in the front, while a complete index in the back of the book makes it easy to find any desired tool quickly. Included are illustrations of 10 of the company's principal branch houses in addition to its headquarters, which are in the Singer Building. The company has evolved particularly complete telegraph and cable codes, making it possible for customers in any part of the world to make complete inquiries covering machinery at but little expense. With these codes are included a code for electric currents and special codes for lengths of beds and tables for lathes and planers. Lathes and planers of especially heavy design are given precedence, and the various lines of machine tools follow. The book is printed on heavy glazed paper and is substantially bound in cloth.

Ignition Specialties.—Pettingell-Andrews Company, Boston, Mass. Catalogue, 6 x 9 in.; 16 pages. Illustrates the company's line of ignition specialties, showing coils, switches, vibrators, spark indicators, &c.

Track Appliances.—Hayes Track Appliance Company, Geneva, N. Y. Circular. Devoted to the Hayes derail and contains illustrations of the appliance in use. The company also makes target stands and other track appliances.

Steel Mine Cars.—Arthur Koppel Company, Pittsburgh, Pa. Circular. Advocates the use of the company's steel mine cars as against wooden cars, and briefly describes the general designs of the company's standard cars.

Steam and Oil Separators.—Pittsburgh Gage & Supply Company, Pittsburgh, Pa. Booklet. The Pittsburgh separator (formerly known as the Detroit), for live or exhaust steam, patents on which have recently been secured by the company, is shown and described. It is made in sizes from 18 in. upward.

Steel Castings.—Monarch Steel Castings Company, Detroit, Mich. Catalogue, 6½ x 9½ in.; 24 pages. Contains principally illustrations of car couplers and parts, draft rigging and repair knuckles and couplers. The company manufactures knuckles to repair all the known makes of couplers, and these are shown by line drawings.

Bench Lathes and Automatic Machines.—Waltham Machine Works, Waltham, Mass. Catalogue, 6 x 9 in.; 21 pages. The company's standard 8-in. bench lathe, described in *The Iron Age* October 29, 1908, is fully covered in this catalogue, including its various attachments, the application of which to the machine is fully explained. A milling machine is illustrated in the same manner and an automatic brass gear cutter and automatic pinion cutter is shown.

Bolt Cutters.—Mummert, Wolf & Dixon Company, Hanover, Pa. Folder. Describes the Plurality die bolt cutter, which is furnished with a set of three dies, which it is claimed will take the place of from 48 to 96 pieces required in some machines. The dies are interchangeable and are shown in the folder, together with a full view of the assembled machine.

Heating and Ventilating Systems.—Buffalo Forge Company, Buffalo, N. Y. Catalogue 197, 6 x 9 in.; 143 pages. A well compiled treatise on the heating and ventilating of public buildings. The company's fan system for this purpose is described at length. An ideal layout of the company's system in a public school is given, and a number of business buildings where installations have been made are shown, together with diagrams explaining the application of the system in railroad shops, power plants, foundries, &c. Interesting in this connection is the description of the system applied to scattered buildings in the plant of the Warren Featherbone Mfg. Company, Three Oakes, Mich. The fan apparatus is illustrated and fully described, and data is included on heating and ventilating.

Steel Car, Ties and Rail Joints.—Carnegie Steel Company, Pittsburgh, Pa. Catalogue, 5½ x 8¼ in.; 61 pages. The advantages claimed for the company's steel ties over wood ties are cited and sectional views of the company's standard ties are shown, together with some excellent illustrations of roads where the ties are in use. Details of concrete construction used in connection with an installation of the tie are illustrated, and there are also views of the company's patented rail joint.

Bolts, Nuts, Rivets, Wagon Iron Hardware, &c.—Oliver Iron & Steel Company, Pittsburgh, Pa. Booklet. This is the company's standard price-list No. 54, and besides listing the lines mentioned above illustrations and prices of mattocks, picks, grub hoes, crow bars, pole line equipment and car and general forgings are given.

Thermit in Foundry Practice.—Goldschmidt Thermit Company, 90 West street, New York. Pamphlet, 6 x 9 in.; pages, 28. Revision to October, 1908, of literature dealing with thermit reactions. Much space is given to a report on the methods used to avoid piping in steel ingots as applied in the Hungarian Government steel foundries at Diosgyor. The use of a can of thermit fastened to a rod, in the prevention of piping in steel ingots, is illustrated. In foundry practice the can of thermit is thrust into the ladle. Riser thermit cans are also manufactured. The quantity of thermit varies from 1 to 10 per cent., calculated on the contents of the riser. Attention is also given in the pamphlet to the use of calcium silicide as a purifier of steel. By adding calcium silicide to a steel with 0.04 to 0.05 per cent. sulphur the sulphur can be reduced to 0.02 per cent., calcium sulphide being formed, while the silicon is mostly oxidized and combines with bases present to form a highly liquid slag. The introduction of the calcium silicide method was only begun in the early months of 1908.

Electrical and Steam Machinery.—MacGovern, Archer & Co., 114 Liberty street, New York. Monthly list, November issue. Gives brief specifications of second-hand alternating and

direct current dynamos and motors, rotary converters, transformers, cars, motors, controllers, engines, boilers, condensers, &c., offered for immediate shipment.

New Publications.

Progressive Pennsylvania. A Record of the Remarkable Industrial Development of the Keystone State, with Some Account of Its Early and Its Later Transportation Systems. Its Early Settlers and Its Prominent Men. By James M. Swank, 261 South Fourth street, Philadelphia. Cloth, 360 pages. Price, $5.

The author of this work needs no introduction to the iron and steel trade. Secretary and general manager of the American Iron and Steel Association for the past 36 years he has won for himself an indelible reputation throughout the world as a gatherer of statistics relating to the iron trade, which are universally accepted as accurate, receiving the high consideration usually given only to official figures bearing Government authorization. His "History of the Manufacture of Iron in All Ages," the first edition of which was published some 24 years ago, was to some extent an outgrowth of his work in recording from year to year the development of the American iron trade, preserving in permanent form the records of the achievements of the pioneers in various branches of the trade and in what are now leading centers of iron production. Mr. Swank's literary talents have been displayed in numerous other publications of a less ambitious character, all of which have shown that he is not a mere compiler of figures, but that he has the power of investing otherwise dry facts with living interest. His latest book is an exemplification of his pride in his native State. Always by inclination a student of history, obliged by his occupation to be a close observer of men, and from his boyhood constantly associated with those engaged in the development of large enterprises, it is not surprising that he has found in the achievements of the citizens of his State a wealth of material to whose exploitation his pen was lovingly if most industrially driven. Those who infer from the title of this book that it contains endless tables of statistics relating to Pennsylvania will need to turn to some other work for such information. It is replete with historical facts, most carefully verified, according to the author's unfailing habit, and much of what is set forth will be new to the general reader or will strike him as being presented in a new manner. Its 34 chapters are practically monographs, each treating of subjects not usually related to those handled in other chapters. All are of more than local interest. The book will undoubtedly attain permanent value as a work of reference.

Cyclopedia of Civil Engineering. A general reference work. Edited by Prof. F. E. Turneaure, Dean of the College of Engineering, University of Wisconsin. 8 volumes. Published by the American School of Correspondence, Chicago, Ill. Price, $24.

Under the leadership of Professor Turneaure a corps of authorities, chiefly educators, has produced a truly monumental general reference work on civil engineering, in eight volumes, well printed, and equipped with a profusion of half-tone and line illustrations. The first volume covers Plane Surveying, by Alfred E. Phillips, and Mechanical Drawing, by Ervin Kenison, examples being worked out in detail in order to show the application of the various methods and principles. Test questions and problems are printed at the close of the volume. Plotting and Topography and Railroad Engineering, both by Walter Loring Webb, fill the second volume, while the Strength of Materials, and Statics, both by Edward R. Maurer; Roof Trusses, by Frank O. Dufour, and Cost Analyses Engineering, by R. J. Dana and H. P. Gillette, are grouped together in the third volume. The latter illustrates how those who have planned the work have embraced in it teaching in some of the most modern branches of engineering effort. The latest practice, too, is presented in the fourth volume, by W. L. Webb and W. H. Gibson, on Masonry and Concreting Materials, Stone Masonry and Plain Concrete Construction, and Reinforced Concrete. E. A. Tucker writes of Steel Construction as applied to buildings, foundations, &c., in volume V, there being also a chapter on Practical problems in Construction, by Sidney T. Strickland and Charles H. Rutan. Bridge Engineering and Highway Construction are taken up in the sixth volume, Frank O. Dufour covering the former and A. T. Byrne and A. E. Phillips the latter. The seventh volume embraces Water Supply, by Frederick E. Turneaure; Irrigation Engineering, by Alfred E. Phillips; Sewers and Drains, by Anson Marston, and Plumbing, by W. B. Gray and C. B. Ball. Professor Turneaure himself is the author of the chapter on Hydraulics. Adolph Black deals with Water Power Development, in the light of the latest great activity in this country, and Charles E. Morrison presents chapters on River Improvement and Harbor Improvement.

A striking feature of the entire series of volumes is the close attention to the latest developments and to modern practice in our own country and the absence of any rehash from old text books.

The Chemical Analysis of Iron. By Andrew Alexander Blair. Seventh edition. Published by the J. B. Lippincott Company, Philadelphia.

The mere announcement that the seventh edition of Blair's work on the Chemical Analysis of Iron has been issued is sufficient, since it is the standard work in English. Mr. Blair has brought the work to date throughout. He has added a method for the separation of vanadium, molybdenum, chromium and nickel in steel and has made some changes in the method for gas analysis. He has also recalculated the table of factors from the values for 1908, as given by the International Committee, in order to meet the changes in atomic weight.

The American Machinists' Handbook. By F. H. Colvin and F. A. Stanley, associate editors of the *American Machinist.* Size, 4 x 6¾ in.; pages, 513. Illustrated. Flexible leather binding. Price, $3. Publisher, the Hill Publishing Company, New York.

Almost all professions have their handbooks. There are those for civil, mechanical, electrical and constructing engineers, doctors, lawyers and even business men, but machinists and machine designers have had only scattered authorities. Probably the first attempt to collect between two covers the information they have need of is the American Machinists' Handbook. The inscription on the title-page describes this book very concisely and exactly: "A reference book of machine shop and drawing room data, methods and definitions." Much of the information has been available before in other sources. There is, of course, nothing new in the tables, and in many of the formulæ. At the same time there is a considerable bit of original matter, and very much that is not familiar to the average user. Naturally some subjects will seem elementary, but a work of this kind cannot be prepared for experts alone, and would be condemned as incomplete without it.

As giving some idea of the contents of the book the following main classification headings are noted: Screw threads, pipe and pipe threads, twist drills and taps, taps, files, work benches, soldering, gearing, milling and milling cutters, grinding and lapping, screw machine tools, speeds and feeds, punch press tools, bolts, nuts and screws, calipering and fitting, tapers and dovetails, shop and drawing room standards, wire gauges and stock weights, belts and shafting, steel and other metals, general reference tables and shop trigonometry.

Not the least useful part of this book is the dictionary of machine shop terms given as an appendix. It is a thing which should prove of value in hastening a standardization of the terms now so at variance. There are some definitions that will be taken exception to, and there are many omissions, but it would be strange were the first attempt to compile such a dictionary complete. It gives, however, a basis for building up an extremely valuable authority, and the authors will doubtless welcome all assistance to bring it to the state of perfection that is much to be desired. In fact they invite criticisms and suggestions on all parts of the book.

Steel-Hardening Metals Produced in 1907.

The production in 1907 of the minerals comprising the so-called steel hardening metals, tungsten, nickel, titanium, molybdenum, vanadium and uranium and tantalum, is described in the forthcoming annual report of the United States Geological Survey prepared by Frank L. Hess. Several of these minerals are now of much commercial importance and development and prospecting are being actually prosecuted in many regions.

Tungsten.

The output of tungsten in 1907 nearly doubled, but the supply overtook the demand and a decline in price resulted. During the first nine months of 1907 the business in tungsten ores and products was brisk, prices were high, ranging from $9 to $14 per unit for tungsten ore carrying 60 per cent. or over of tungsten trioxide, and there was a large increase in the production both in this country and abroad. On October 1 one of the large dealers stopped buying, and others followed, though some buying continued at low prices, $5 per unit being an ordinary offering during the latter part of the year.

The demand during the first part of the year was much greater than that of 1906, and was due mostly to the use of tungsten in tool steel. Under the stronger demand, with a consequent rise in prices, prospecting and mining were both actively prosecuted, so that the output of the United States was increased from a total of 928 net tons of concentrates carrying 60 per cent. tungsten trioxide in 1906 to 1640 net tons in 1907, while the value rose from $348,867 to $890,048. Colorado, the tungsten mines of which are all located in Boulder County, again led in production with 1146 tons of wolframite approaching ferberite in composition, valued at $573,642. California was the second State in order of production, while smaller amounts were produced in Montana, Washington, Nevada, Arizona and probably in New Mexico. The output from California and most of that from Montana was in the form of scheelite, of which a total of 414 net tons was mined. No ore is known to have been produced in South Dakota, although much prospecting was carried on.

The tungsten mining industry of Boulder County, Colorado, is largely in the hands of a few companies, several of which work their properties by leasing. Only a few of the companies have concentration plants, and these companies either buy the ores produced by smaller operators or operate their plants as custom mills. The losses in milling are serious, and efforts are being made to reduce them. The ores ordinarily mined are said to require from 20 to 30 tons to produce one ton of concentrates carrying 60 per cent. tungsten trioxide. Richer ores than this are mined, but they are the exception. The larger companies find it impossible as a rule to produce tungsten ore profitably at $5 or less per unit, so that the product for 1908 will undoubtedly be less than for 1907.

The largest individual American producer of tungsten ores, and probably the largest in the world during 1907, was the Cardinal Company at Boulder, Colo. In California by far the largest production was made by the Atolia Mining Company at Atolia, San Bernardino County, 5 miles south of Randsburg.

Nickel.

A certain amount of nickel, cobalt and copper sulphides occur with the lead ores in southeastern Missouri, and a considerable saving of these concentrates was made by the Hudson Valley Lead Company and the North American Lead Company of Fredericktown. The latter company operates a smelter for reducing the metals. The only other production of these ores was made by the Standard Consolidated Mining Company, Prairie City, in the eastern central Grant County, Oregon. However, like that of tin, the total output of nickel and cobalt in the United States was insignificant when compared with either the world's output or the amount used in the country. Owing to the fact that the total output cannot be given without allowing the individual productions to be known, the figures will not be printed.

As in former years, the principal producing foreign mines were those at Sudbury, Ontario, and in New Caledonia, with mines producing smaller amounts in Norway, Germany, Peru and Mexico.

The production of Ontario, Canada, in 1907, though somewhat less than in 1906, was larger than the combined production of the other deposits of the world. The production of nickel ore and matte in Ontario, since 1905, has been as follows:

Year.	Ore smelted.	Matte obtained.	Nickel in matte.
1905	257,421	17,388	9,438
1906	340,059	20,364	10,745
1907	359,076	22,041	10,095

The matte was practically all shipped to other countries for refining, 1259 tons going to England and 8429 tons coming to the United States.

The imports of nickel into the United States since 1905, inclusive, as reported by the Bureau of Statistics, have been as follows:

Year.	Nickel, nickel ore and matte, Value of nickel oxide, alloys of nickel with copper, &c. Pounds.	Value.	Manufactured articles of nickel.	Total value.
1905	31,072,206	1,958,840	3,291	1,962,131
1906	34,082,042	1,867,568	8,963	1,876,531
1907	18,598,638	2,233,867	9,159	2,243,026

Titanium.

The only American production of titanium ore during 1907 was made by the American Rutile Company from their rutile deposits at Roseland, near Arrington, Nelson County, Va. Their output was considerably increased over that of 1906, but as there was but one producer the Survey is unable to state the amount.

Much activity was shown in experimenting with ferrotitanium during the year, and the American Titanium Alloys Company at Niagara Falls, in co-operation with various railroad companies, caused several lots of rails to be made in which ferrotitanium was used. These rails are being tested by actual use, and so far the results are said to be encouraging. The use of titanium in gray iron seems to give much promise, while less effect is seen in white iron. The favorable action of titanium seems to be entirely that of a scavenger, combining with and removing in the slag the oxygen and nitrogen contained in the iron or steel. It is said that this allows the making of steel rails with a much higher carbon content, thus making a harder rail, while retaining the toughness of the mild steel. However, the experiments now under way will go far toward definitely establishing these points. The tendency is to use ferrotitanium with a low titanium content, and 10 per cent. titanium, low in carbon, seems to be called for most often. Only one-tenth of 1 per cent. of titanium is needed to treat steel or iron. The company is also engaged in experiments with cuprotitanium. The Primos Chemical Company, Primos, Pa., is also engaged in experiments with ferrotitanium and other titanium alloys.

Molybdenum.

The only production of molybdenite reported was a small lot of hand picked ore, mined by the Crown Point Mining Company at Crown Point, near Lake Chelan, Wash., but it was not sold during 1907. The small production is not due to lack of deposits, but to difficulties of concentration and an inactive demand. The use of molybdenum in steel seems to have made no headway in this country during the year, though it is still a matter of interest in Europe. Several mining companies are interested in working the Maine deposits at Cooper, Tunk Pond and near Machias.

Vanadium.

Vanadium iron oxide, from which ferrovanadium was made, was produced by the Vanadium Alloys Company, Newmire, Colo., and a small amount of sodium vanadate was produced by the Dolores Refining Company, Cedar, Colo. Both companies took steps toward a change in processes during the year.

The Vanadium Alloys Company used roscoelite as an ore, which it obtained from the United States Vanadium Company, Telluride, near Newmire. The Dolores Refining Company obtained its vanadium product as a by-product in the manufacture of uranium salts from carnotite

from ores obtained in the vicinity of the mill. One lot of vanadium ore containing roscoelite was exported by J. C. Simmons from Newmire to England during the year. J. W. Wescott, Cedar, Colo., was also a producer of similar ore. All the ore is practically from surface excavations. Discoveries of vanadinite (lead vanadate) were reported by the Copper Ridge Mining and Development Company at Magdalena, N. M., the Prassinos Copper Mining Company, 23 miles south of Casa Grande, Ariz., and from the Rothschild mine, 27 miles northwest of Dillon, Mont., but no output is known to have been made at either place.

The total quantity of ore sold or used in 1907 was 1042 tons, which probably averaged little over 2 per cent. vanadium, all produced at the places noted in southwestern Colorado, and was probably worth about $6000 at the mines. In the performance of assessment work at various localities some ore was removed, which was left on the dumps.

The American Vanadium Company, Pittsburgh, carried on many experiments with regard to the application of vanadium to steel and cast iron during the year, and test pieces of armor plate were made. The deposits from which it draws its supplies are at Cerro de Pasco, Peru.

Uranium.

Little was done with uranium deposits in the United States during 1907. Assessment work was performed on many claims in Colorado, and a small amount of uranium salts was turned out by the Dolores Refining Company, Cedar, Colo., from carnotite obtained from surface excavations in the vicinity.

Tantalum.

The price of tantalum dropped very greatly in 1906, and did not recover during 1907. The demand was very light, and prices were a matter of contract. The only production reported was a few hundred pounds in South Dakota, while another lot of unknown weight and value, probably from North Carolina, was shipped to France.

The National Society for the Promotion of Industrial Education.

The second annual meeting of the above named society is to be held at Atlanta, Ga., November 19, 20 and 21, for which occasion a most attractive programme has been arranged, including a public banquet, at which Governor Hoke Smith will act as toastmaster. State branches are now organized in Alabama, Georgia, Massachusetts, Montana, Ohio, Rhode Island, Virginia and Pennsylvania, with State committees co-operating in 26 other States.

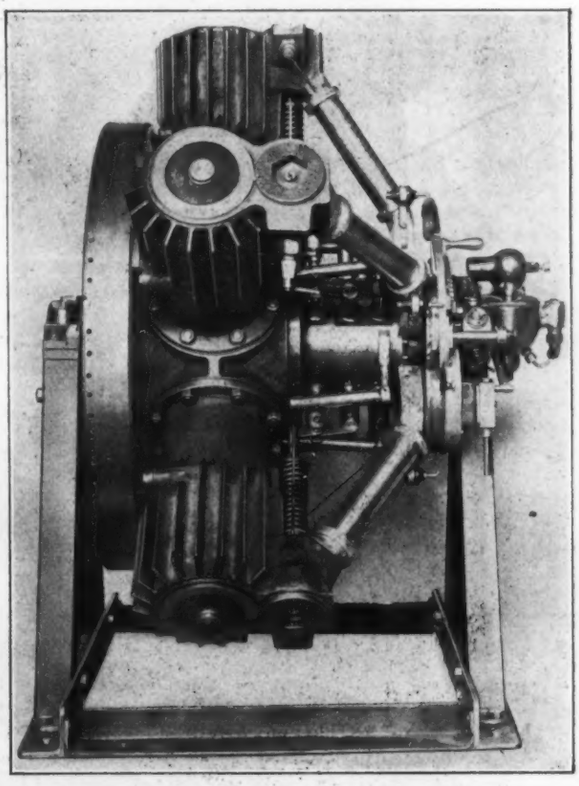
The Pennsylvania branch was organized at a meeting held at the School of Industrial Art, Broad and Pine streets, Philadelphia, October 29. The following officers were elected: President, Leslie W. Miller, Philadelphia; vice-presidents, Arthur A. Hamerschlag, Carnegie Technical Schools, Pittsburgh; John M. Shrigley, Williamson School, Delaware County; H. H. Stoek, editor *Mines and Minerals*, Scranton; Dr. Nathan C. Schaeffer, Harrisburg; Paul Kreutzpointner, Altoona; treasurer, Wm. F. Gray, Central High School, Philadelphia. Board of Directors: Wm. C. Ash, Philadelphia Trades School, Philadelphia; Harry S. Bitting, Williamson School, Delaware County; Thelwell R. Coggeshall, Girard College, Philadelphia; J. Sellers Bancroft, Philadelphia; Laura H. Carnell, Temple College, Philadelphia; Wm. C. Easton, Philadelphia; Wm. A. Mason, Germantown; David Lupton, David Lupton's Sons Company, Philadelphia; W. J. Spencer, Wyndmoor, Philadelphia; Ronald P. Gleason, Scranton; Charles F. Scott, Westinghouse Electric & Mfg. Company, Pittsburgh; W. Lucien Scaife, Scaife Foundry & Machine Company, Pittsburgh.

A monorail street railway will probably be built in New York City. The Interborough Rapid Transit Company has sold the Pelham Park & City Island Railroad Company, which is a short horse car line in the extreme northeastern part of Bronx Borough to the Monoroad Construction Company. Application has been made to the Public Service Commission by the latter company to construct a monorail road on this line. H. B. Reed is chief engineer of the company, and H. H. Tunis is consulting engineer.

The Los Angeles Rotary Gas Engine.

A new form of revolving gasoline engine, built by the Los Angeles Rotary Gas Engine Company, Los Angeles, Cal., is in daily operation in an automobile in that city. The five cylinders are fixed to a circular muffler that looks like a flywheel, and revolve about the shaft, which is stationary, the piston rods acting on cams on the shaft and the power being taken from a wheel bolted to the revolving cylinders. The cylinders are air cooled, obviously in a more thorough way than is possible with the usual type of air cooled engine.

The rotating cylinders obviate the need of a flywheel, and as their charges are exploded alternately every second revolution, the engine has an extremely even motion, doing away almost altogether with vibration arising from the straight line reciprocation where the cylinders are stationary. This feature alone makes the new engine valuable in pumping plants and for the running of dynamos, although it was originally designed strictly as an automobile motor. Lubrication is by centrifugal force, the oil being introduced through a hole in the shaft, and thence thrown to all parts of the cylinders by the rapid rotation.



A Revolving Gasoline Engine for Automobiles, Built by the Los Angeles Rotary Gas Engine Company, Los Angeles, Cal.

This engine has shown itself unusually well suited for hill climbing since it steps up from low to high speed very quickly, owing to the absence of change speed gears; the engine is capable of being held down to a speed of a man's walk while running on what would be known as the highest gear on the usual form of vertical engines.

The 22-24 hp. engine, the size designed for use in runabouts and small touring cars measures only 23 in. in diameter and 14 in. wide, while its cost is approximately two-thirds that of an engine of the same power built after the usual form. The weight is about 25 lb., but the engine can be made much lighter if desired by the removal of certain parts, which, when added, do away with some of the objectionable features of the vertical reciprocating engines. It is planned to experiment with the lightest of these engines for use in aeroplanes.

The Gridley Piston Ring Machine.

Principally the semiautomatic machine illustrated in Fig. 1 is intended for forming piston rings ready for grinding on the edge, boring the inside, turning the outside eccentric and cutting off the ring from the casting automatically. The operator has only to fasten the casting on the studs in the faceplate by three nuts, as shown in Fig. 2, and start the machine. As all three of the operations are going on at the same time, and as the operator has to give only a small part of his time to the machine, it will manufacture rings at very small cost. The machine will handle rings up to 6 in. in diameter, either eccentric or concentric, and will produce from 300 to 400 rings per day of 10 hr. The machine is also arranged, as indicated in Fig. 3, for turning and grooving pistons up to 6 in. in diameter, the output being about four per hour, according to size, and 4-in. pistons have been manufactured at the rate of seven per hour. It is built by the Windsor Machine Company, Windsor, Vt., and was designed by George O. Gridley of the company, whose name it bears.

It will be noticed that the machine is of the standard Gridley automatic type, with a special part substituted for the turret. The function of this part is to cut the outside diameter of the ring eccentric and the inside concentric, and to cut off each ring as fast as it has been machined. The eccentric shape is produced by a lateral reciprocation of the tool slide, obtained from an eccentric bushing on the shaft *c*, shown in the line drawings. The shaft is driven from the spindle by gears of equal diameter, and the eccentric rotates in a square block.

The details of the mechanism for eccentric turning are given in Fig. 4, which shows a plan with a partial horizontal section on line A A, an end elevation and a

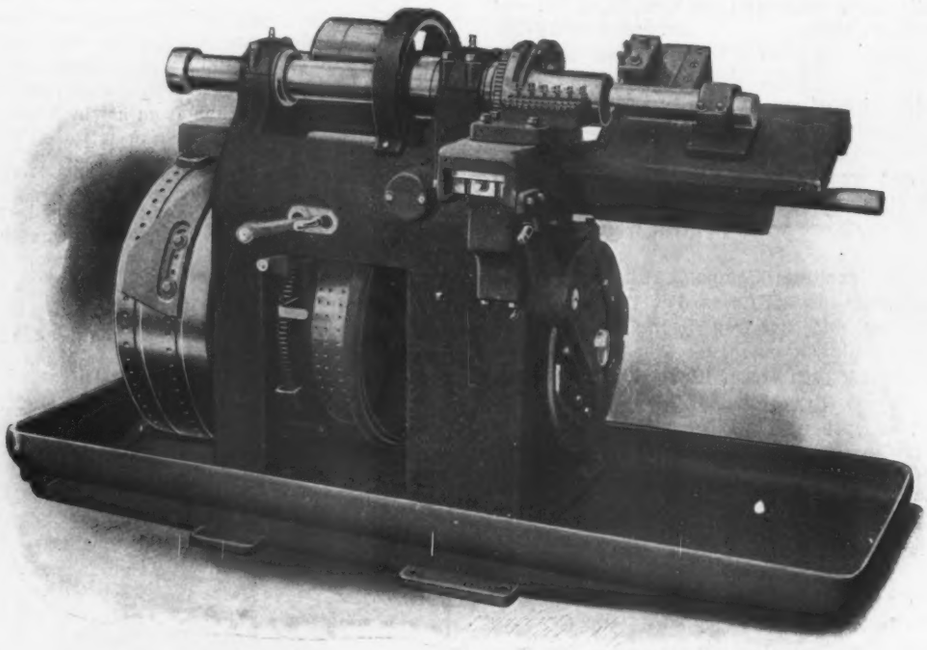


Fig. 1.—The Gridley Semiautomatic Piston Ring Machine Built by the Windsor Machine Company, Windsor, Vt.

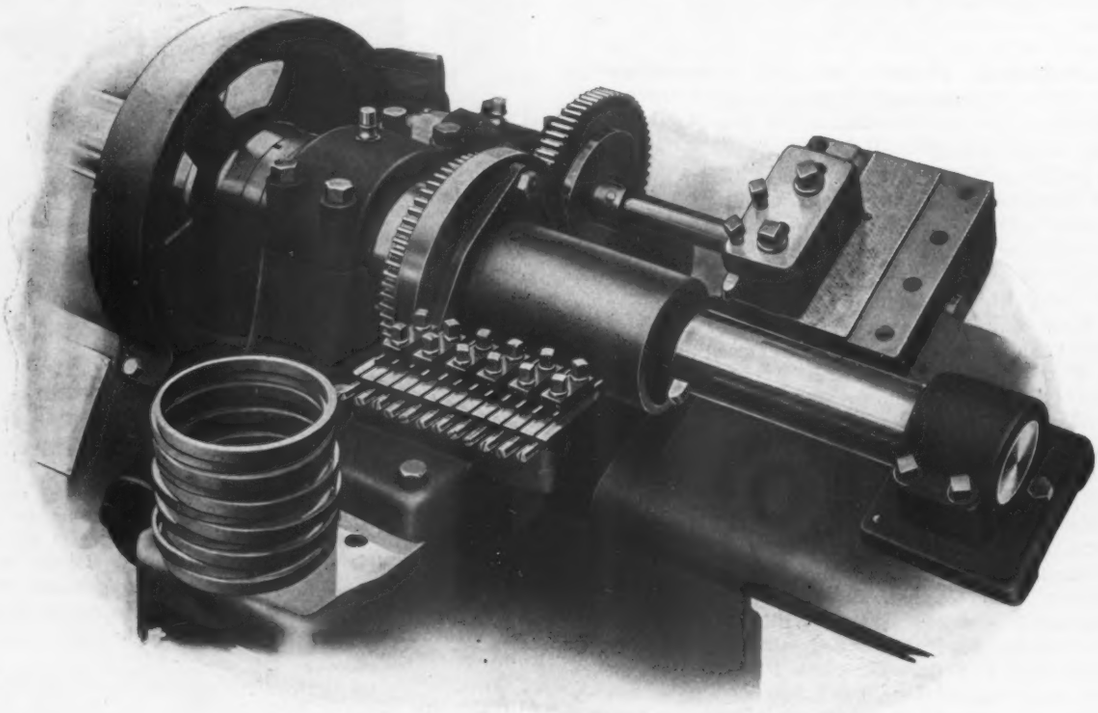


Fig. 2.—Detail of the Working Parts as Set for Forming Piston Rings.

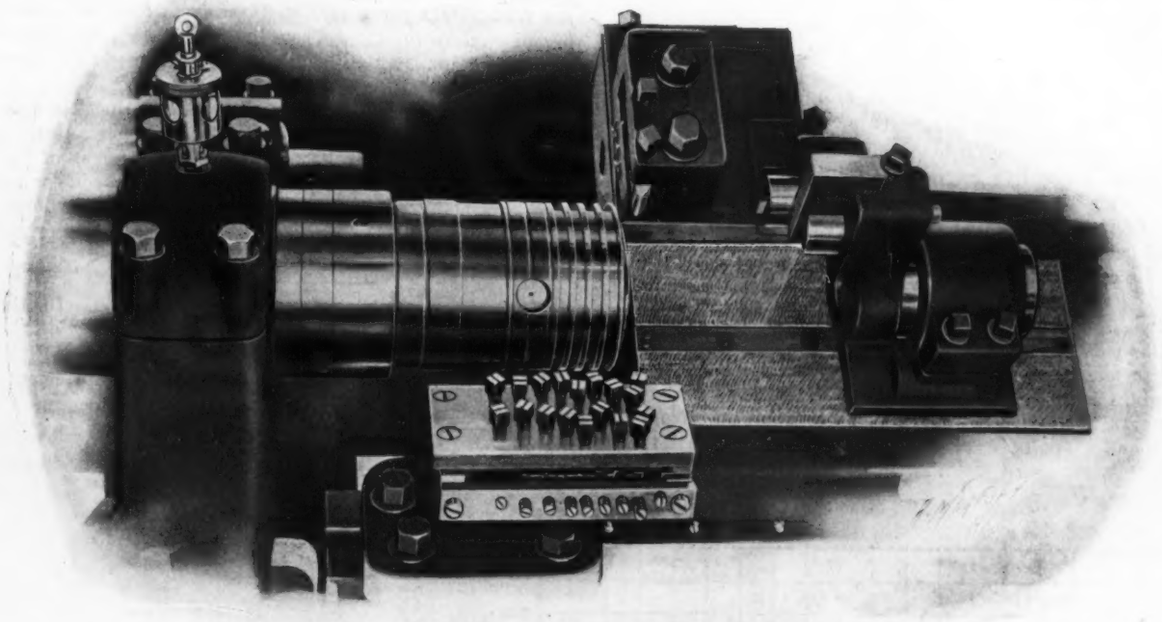


Fig. 3.—Detail of the Working Parts as Set for Grooving a Piston.

partial vertical section on the line B B, and a vertical section on the line C C. In the head of the machine is the spindle to which is attached the faceplate *a*. The faceplate carries a gear, which drives the gear *b*, to which is attached a coupling pinned to the shaft *c*. This shaft is supported in the slide *d* by two bushings and carries the eccentric *e*, which it drives by a key which is free to move endwise in the keyway in the shaft *c*. The eccentric *e* is free to revolve in the square bushing *f*, which is itself free to move vertically in the guideway in the auxiliary slide *g*. This arrangement reciprocates the slide *g*, which carries the tool, once each revolution of the spindle. It will be seen that the construction forms an oil pocket at *h*, which keeps these parts thoroughly lubricated. The gear *b* runs free on a bushing held in the frame of the machine by a cap. The same bushing acts as a bearing for the back gear shaft, which drives the spindle.

The boring of the concentric inner surface and the turning of the eccentric outer surface proceed simultaneously. The cutting off tools are set at intervals to give the correct width of rings, and each succeeding tool from right to left is set nearer the center, so that they act on the work in a predetermined succession, each ring being cut off just behind the boring and turning tools.

When the machine is to be used for turning and grooving pistons the gears are removed and the slide holding the turning tool is fastened down. The piston casting is first beveled, faced and bored, and reamed on the end to fit the plug in the spindle, to a shoulder on which it is held by the fixture plainly shown in Fig. 5. The builder recommends that the casting be machined twice in the machine, the first time roughed out to within about 1-32 in. of the finished size with as coarse a feed as the tools will stand, and then refinished for grinding. While this takes a little more time, it is considered the best practice, as it is impossible to hold and drive some

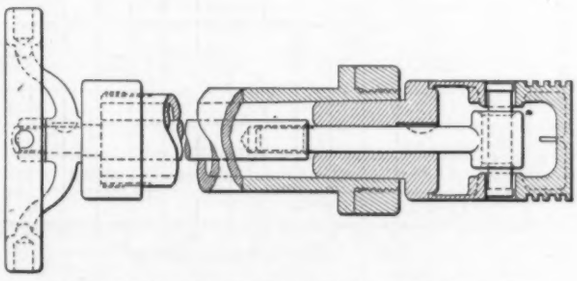


Fig. 5.—Fixture for Holding a Piston to Be Grooved.

of the modern pistons without springing them, except under a light cut, and it also allows them to season after the roughing cut has been taken. Roller back rests support the end of the piston while it is being grooved. The system of tooling is adaptable to other classes of work in this and other machines.

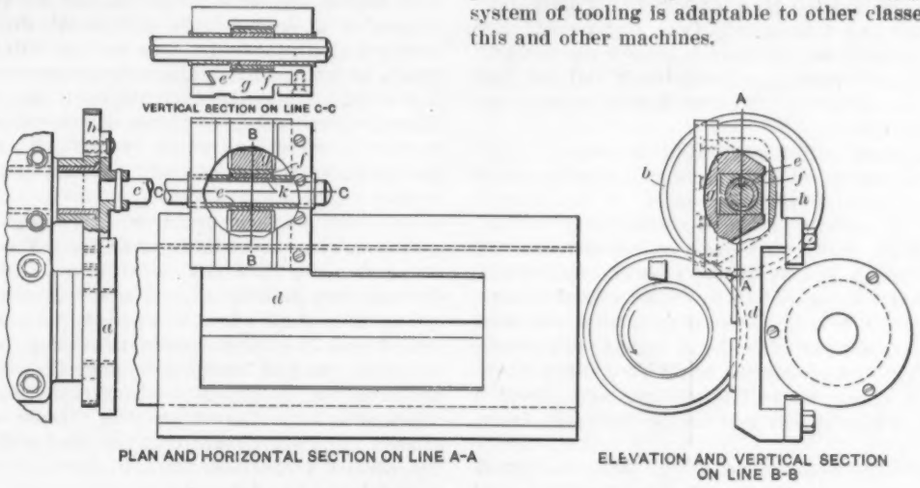


Fig. 4.—The Mechanism for the Eccentric Turning.

Economy Tests of High-Speed Engines.

In a discussion of a paper on the above subject submitted to the American Society of Mechanical Engineers, C. H. Treat gave some interesting results from tests made at the American Blower Company's plant in Detroit, Mich. In the first part of his paper the author gave complete data on a test made July 9 and 10 of this year on a 7 x 7 in. vertical self-oiling engine which had been run almost continuously night and day for 10,000 hr., connected to a forced draft fan. The engine cylinder had been badly scored and the mean diameter increased to 7.082 in. The rings had been broken, due to water, and were replaced prior to test. The dotted line on the curve, Fig. 1, shows the results of as low as 41 lb. per indicated horsepower per hour under full load. This performance, it will be noticed, is as good as many new engines in their best condition would show. A further observation indicates that it is quite important from an economical point of view to keep the piston rings on small high speed engines in shape to prevent undue leakage.

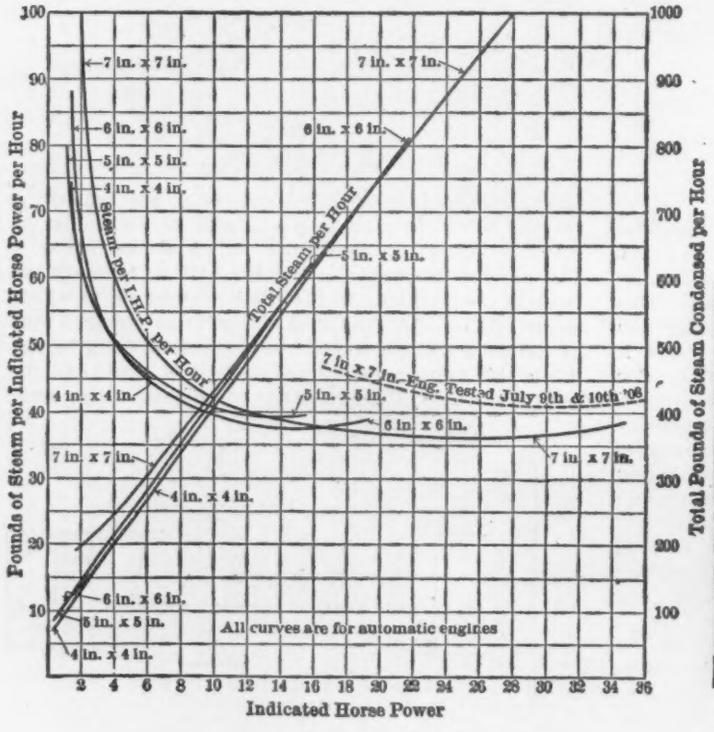

Pounds of Steam per Indicated Horse Power per Hour
Total Pounds of Steam Condensed per Hour
Indicated Horse Power
7 in. x 7 in.
6 in. x 6 in.
5 in. x 5 in.
4 in. x 4 in.
Steam per I.H.P. per Hour
Total Steam per Hour
7 in x 7 in. Eng. Tested July 9th & 10th '08
All curves are for automatic engines

Fig. 1.—Performance Curves of High-Speed Engines.

"The data for the full line curves in Fig. 1, showing results for engines in proper condition, were obtained from tests made in 1905. The test was made by condensing the exhaust steam in a surface condenser consisting of a steam heater suction pipe immersed in a tank, having an overflow and 1 lb. supply from city water. The whole was overhead, so that any drip or leaks could be seen and stopped. That the section itself did not leak at any time was shown by the entire absence of drip, unless steam was entering.

"The condensation being piped down, heater pipes and base were slanted to drain through a water seal to prevent steam blowing into the upper of two barrels having drain valves at the bottom, the lower barrel being on platform scales. For each barrel of water the weight before filling was subtracted from the full weight. The scales used weighed correctly. The indicator spring was calibrated. A long lever reducing motion was used to prevent lost motion. The drum spring was drawn tight, and at the high speeds the cards were short. Runs were made at speeds up to 500 rev. per min., using a Prony brake at high speeds and taking the brake horsepower.

"Readings were taken every 5 min. after conditions had become constant and the engine was well warmed up. No corrections were made for moisture in the steam, but a few determinations showed a quality of 98 to 99 per cent. Data given in Fig. 1 are from tests of a number of engines for most sizes, the speed being 350 to 500 rev. per min., though some were at somewhat lower pressure."

Fig. 2 gives a section of an A B C engine, showing the arrangement of the cylinder and valve chest, also the unique patented oiling system. Mr. Treat's test of the engine used gave the indicated friction horsepower as 1.18, this being only 4 per cent. of the indicated horsepower of the engine. To the oiling system is due credit for the low internal friction.

Resistance of Nickel Steel to Corrosion.—In the course of a discussion at the September meeting of the Engineers' Society of Western Pennsylvania, held at Pittsburgh, E. W. Pittman made the following statement:

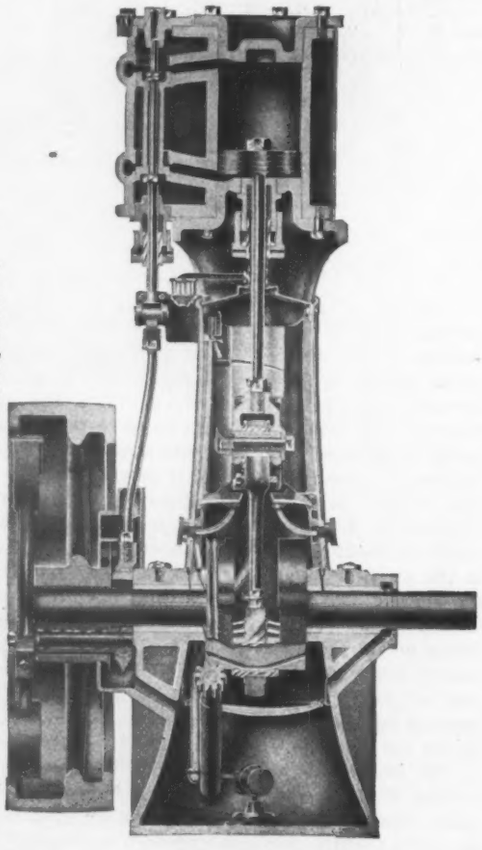


Fig. 2.—Section of A. B. C. Engine Tested.

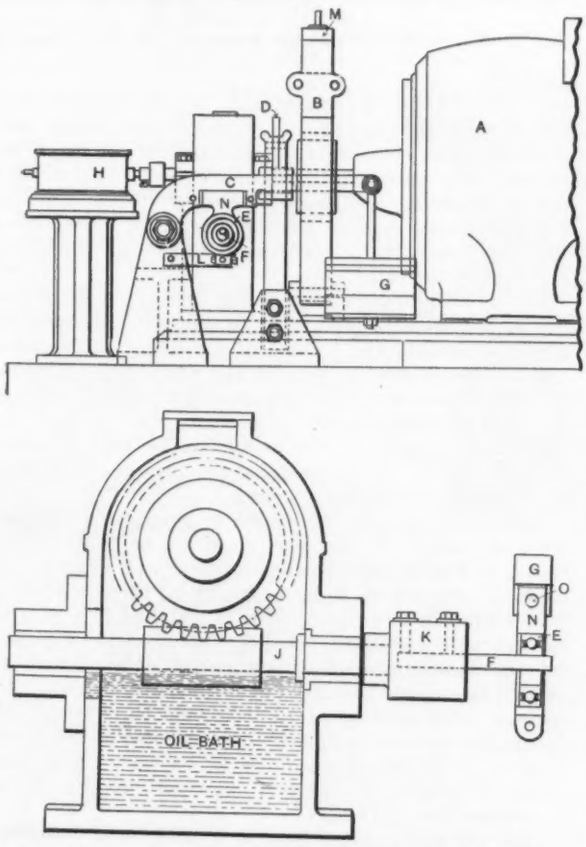
"The Government has had so much trouble with keeping the lock gates painted in the two rivers here at Pittsburgh that it used nickel steel in the last two gates put up, in order to avoid the corrosion, and I understand that, even though the paint comes off, the nickel steel resists the action of the sulphuric acid in the water to such an extent that it practically does not deteriorate at all." It would be interesting to know the percentage of nickel in this steel. While the fact has been demonstrated that nickel in steel resists corrosion, it had been supposed that so large a percentage would be required as to make the use of such steel prohibitory on anything like a large scale.

Germany has been hit hard by the financial depression. Many factories have been closed down. Conditions are so bad that city governments are anxiously considering what means they shall adopt to meet the necessities of those out of work. A comprehensive census of the unemployed will take place in Berlin, November 17, with the view of enabling the municipal authorities to determine how much of an out of work problem thay have to face this winter. There are fears that the total will reach an unprecedented proportion, not only there, but in all the industrial centers of the empire.

Testing the Wearing Qualities of Steel Rails.

The action to which a rail is subjected in the track is very complex and particularly hard to attempt to reproduce in the testing room. It is, however, known that the wear depends upon certain conditions; hence, by estimating these conditions, a value can be given to the steel. It is for this reason that the various tests for hardness have been applied, prominent among which is the Brinell ball test, but sufficient work has been done to show that the wear does not depend alone upon hardness. By taking rails whose history is known, estimating their hardness, and comparing this with the actual wear in the track, it is seen that the two results are not the same. In the same way it may readily be shown that the wear does not depend alone upon the composition or the microstructure.

A test that would give accurate comparative results would be very valuable, as good wearing qualities are those most desired in the rail. Work along the direction



Apparatus for Testing the Wearing Qualities of Steel Rails.

of securing these qualities is greatly hindered by having to wait for the returns of laying test rails in the track until appreciably worn. A short paper on a suitable test was read at the last meeting of the Iron and Steel Institute by E. H. Saniter, who is actively connected with Steel, Peech & Tozer, Ltd., large manufacturers of rails. He describes the testing machine he has devised and gives some results.

The principle on which the test rests is as follows: A round test piece, revolving a fixed number of revolutions, and rotating by friction the inner ring of a ball bearing loaded with a fixed weight. There the action is very similar to that of a wheel rolling on a rail. The test piece is made sufficiently long to project well through the ball bearing, and thus prevent any material side flow of the metal. A drawing of the machine is shown herewith, and the following description may be given: A is the driving motor. B is a brake which is kept out of action by the electric plug contact M. J is the spindle, which runs in an oil bath and is actuated by a worn gear. It runs at 4000 rev. per min. To it is attached the chuck K, which holds the test piece F, as shown in the lower drawing.

The chuck is one piece of steel with a central hole slightly larger than the test piece. There are three pairs of set screws, with lock nuts, for holding the test piece and also centering it. The lever C holds N, the carrier of the ball bearing, on a pin, O, the carrier being made so that it can move on the pin in any direction and adjust the ball bearing to the test piece independently of the lever. E is the ball bearing, the outer ring of which is gripped by the carrier N, and the inner ring is rotated by the revolving test piece F. The arm L holds a screw with a lock nut, which is set against the bearing carrier to prevent the slight forward thrust of the spindle J from pushing the bearing outward.

D is a hook with a thumb screw, by which the lever and bearing can be raised, while starting the machine, and then gradually lowered on the test piece, thus avoiding straining the test piece by starting with the load on. On the end of the lever C is a hanger for holding the weights G, and H is the revolution counter.

The bearings are of quenched case hardened steel, but in spite of this the inner ring, in contact with the test piece, gradually wears, and a new bearing has to be substituted. It is therefore necessary for comparative tests that a standard steel should be used for testing new or partially worn bearings.

The dimensions of the test piece and the method of conducting the test are as follows: The number of revolutions is 200,000 with a load of 205 lb. on the bearing at the point of contact. The test piece is 5 in. long by ½ in. in diameter. The length of the test piece in contact with the bearing is 11-16 in., and the test occupies 50 min.

The test piece is carefully measured at the part used to the ten-thousandth part of an inch, before and after the test, and the wear test number is the number of ten-thousandths parts of an inch by which the diameter has been reduced. The following tests illustrate comparative results obtained on various steels:

	Nickel.	Car.	Sil.	Sul.	Phos.	Man.	Wear No.
Rail	3.52	0.63	0.25	0.029	0.029	0.72	28
Rail	Nil.	0.77	0.06	0.022	0.012	0.78	45
Rail	Nil.	0.71	0.07	0.019	0.010	0.72	48
Trolley	Nil.	0.59	0.28	0.026	0.031	0.82	48
Car rail	Nil.	0.51	0.31	0.056	0.057	0.68	64
Car rail	Nil.	0.43	0.21	0.050	0.055	1.04	65
Car rail	Nil.	0.40	0.09	0.056	0.058	1.08	67
Axle	Nil.	0.30	0.11	0.028	0.027	0.69	75

The smallest wear number is the least wear, and consequently the best wearing steel. The appearance of the worn surface is similar to that of a rail under traffic. The position from which a test piece is taken is, of course, of great importance. In this case it is from the upper corner of the rail head in a longitudinal direction.

A short discussion followed the paper, in which it was pointed out that the test had nothing in common with an alternating stress test. The steels given in the table were tested for hardness by the Brinell method, but the results did not bear any relation to the wear.

G. B. W.

Vessel Safeguarding.—An interesting description of the Stone-Lloyd hydraulic system for operating water tight doors on the Cunard steamships, Lusitania and Mauretania, is contained in a paper entitled "Some Recent Inventions as Applied to Modern Steamships," by W. Carlile Wallace, which will be presented at the meeting of the Society of Naval Architects and Marine Engineers, to be held in New York, November 19 and 20.

The Washington Power Company, Spokane, Wash., is constructing a power station on the Spokane River at Little Falls, about 30 miles west of Spokane, which will have a rated capacity of 30,000 hp. Work on this station has been under way for some months, and about 200 men are employed upon it at the present time. The plant will consist of four 5000-kw. General Electric Company generators, direct connected to four I. P. Morris turbine units, each of which is designed to develop 9000 hp. at its maximum load under a head of 66 ft. This station, which is known as the fourth power station of the Washington Water Power Company, will probably be ready by July 1, 1910.

The G. E. Centrifugal Air Compressors.

Moderate pressure air compressors for industrial air blast and exhauster service of centrifugal type are now being built by the General Electric Company, Schenectady, N. Y. These range in pressure ratings from 0.88 to 4 lb. per sq. in., and in capacities from 750 to 10,000 cu. ft. of free air per minute.

Essentially the compressor consists of a rotating impeller surrounded by a casing with an intake opening at the center and a discharge opening at the circumference. In appearance and in operation it is similar to a centrifugal pump. The efficiency depends largely upon the design of the impeller and casing and on the proper shaping of these parts. These machines are of substantial construction, and it is claimed can be used severely with but little expense for maintenance.

For driving these compressors steam turbines and direct-current and alternating current induction motors may be used. Figs. 1 and 2 show typical turbine and motor driven compressors. The direct-current motors are similar in construction to the generators used in turbo-generator sets. Commutating poles and shrunk ring commutators are used so that sparkless commutation is insured, and a rheostat is supplied so that adjustment of pressure can be made by changing the speed. The turbines used for these sets are of the Curtis type, similar to those now being manufactured for driving generators. Slight speed variations can be readily made so that changes in pressure are easily obtained. Turbine driven sets can be furnished for operating noncondensing, and for sizes above 50 hp. to operate condensing. Steam pressures from 100 to 175 lb. are required. The induction motors furnished have the squirrel cage type of rotor. Since the speed of this type of motor cannot be varied, care must be taken to specify a pressure sufficiently high to cover the operating requirements, because at constant speed the pressure cannot be varied without altering the design of the impeller. In the discharge main a blast gate of butterfly valve type should be located, which prevents the compressor from becoming loaded during the starting period. It also cuts off the discharge main from the opening through the compressor shell to the atmosphere when the set is not in use.

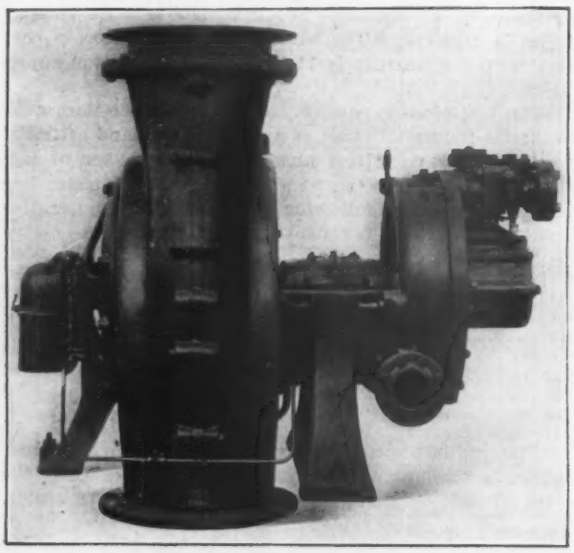


Fig. 1.—A General Electric Centrifugal Air Compressor Directly Connected to a 50-Hp. Curtis Steam Turbine.

As in the case of centrifugal pumps, the pressure depends on the peripheral velocity or rim speed of the impeller. Increased pressure can be obtained by increasing the speed. The volume of free air is, however, limited by the capacity of the driver, and hence must be reduced proportionately to the increase in pressure, otherwise the driver might become overloaded. The pressure in the mains leading from the compressor is free from pulsation and practically constant for all volumes within the rated capacity of the compressor. Unlike positive pressure blowers, the power required to drive centrifugal compressors varies approximately with the volume of air delivered when operating at constant speed. This gives a greater flexibility and improved economy to the centrifugal type where variable loads are required, satisfactory efficiency being obtained between the limits of 25 and 125 per cent. of the rated load.

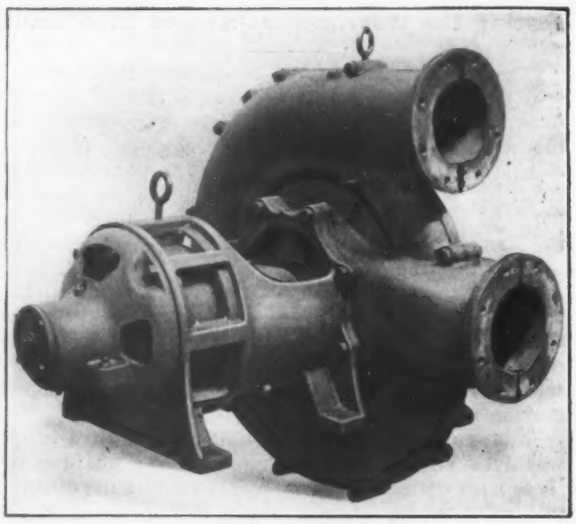


Fig. 2.—A 27-In. Centrifugal Air Compressor Directly Connected to a Three-Phase Alternating Current Motor.

For foundry cupola service the direct-current motors can be compound wound so as to automatically increase the speed should the volume of air delivered decrease, thus increasing the air pressure and preventing undue reduction of flow of air through the cupola when it chokes up. Further adjustments of pressure can be made by changing the speed of the motor by the field rheostat. Similar results are obtained for the turbine driven sets by using a compensating governor.

Since the pressure developed is practically constant from no load to 25 per cent. overload, as is strikingly shown in Fig. 3, these compressors are well adapted for constant pressure work, as in gas or oil furnace service. Preferably one large compressor is installed in a central location with distribution mains running to the different furnaces instead of employing a number of small blowers located in various places. For ordinary gas or oil furnaces a rated pressure of 1.7 lb. should be sufficient, although for furnaces requiring a concentrated or positively directed jet, 2.7 lb. pressure may be desirable. For blast furnace service, this type of compressor promises to be of considerable usefulness.

The centrifugal compressor is claimed to have several advantages over other types—compactness, simple design, high efficiency throughout the working range, no wearing parts, except the bearings, no gearing nor belting required, and there is a peculiar advantage where a variable volume is required at constant pressure, as this is a characteristic which is inherent in a centrifugal compressor, without change of speed or appreciable loss in efficiency. In the displacement type of compressor at

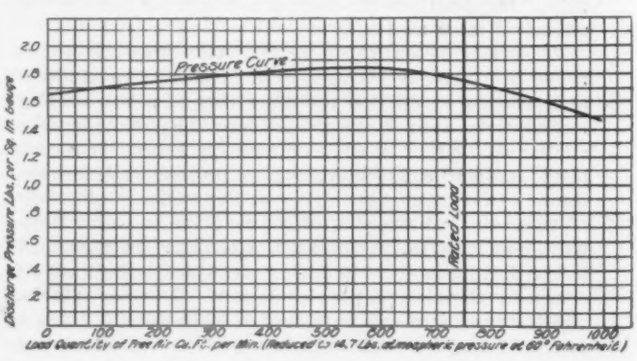


Fig. 3.—Typical Pressure Curve for a G. E. Centrifugal Air Compressor.

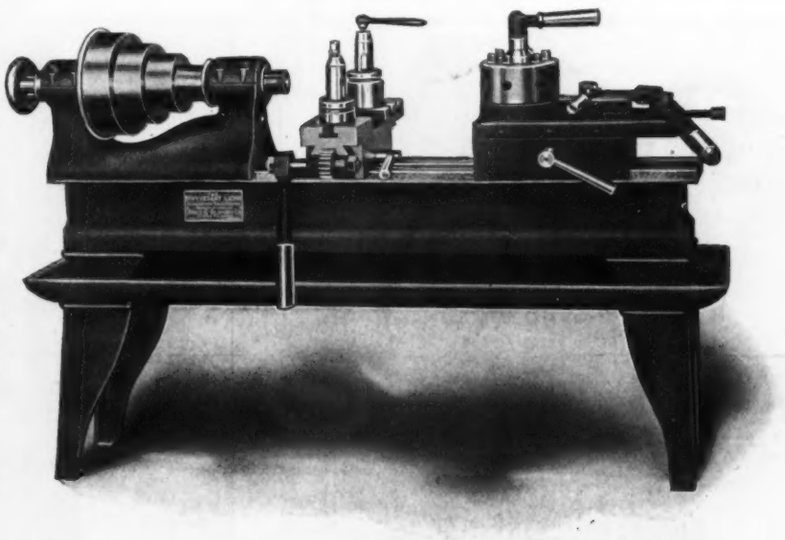
constant speed, however, the pressure drops rapidly with the output above a certain point, and the volume is limited by the size of the cylinder and the speed. A loss of power and efficiency for fractional volumes results with displacement machines, and it is impossible to maintain pressure on overloads. It would also require an exceedingly complicated governing mechanism and a special form of driver to automatically obtain speed variations which would produce results comparable with the centrifugal type of compressor.

These compressors are considered to be admirably adapted for use in smelters. They can also be used to advantage in sulphite pulp mills and in chemical works where a small degree of vacuum is required.

The Stuyvesant Manual Training Turret Lathe.

An 11 in. by 4 ft. turret lathe, known as the Stuyvesant, and particularly intended for manual training schools, is built by the J. G. Blount Company, Everett, Mass. It is adapted for chucking work and the various operations connected with the manufacture of screws, studs and other small parts manufactured in turret or screw machines. The spindle nose is threaded to receive chucks, and is counterbored and receives a hardened steel bushing, which is afterward ground to size to take the standard sizes of spring collets. The turret is furnished with six holes for holding tools. The locking mechanism consists of a hardened steel ring with tapering cuts across its periphery, and a hardened steel locking bar with means of adjustment to take up wear. The locking bar has a stop screw for use when pieces are to be milled to certain lengths.

The head of the machine is provided with ring oiling bearings lined with Babbitt metal. The cone is turned inside and out, is accurately balanced and is pressed on the spindle. The ways are flat and the cut-off rest and turret are scraped to fit. The binding levers, to hold the cut-off rest and turret in position, are at the top of the bed. The cut-off rest has two tool posts which are adjustable, so that forming tools may be used, and has a rack and pinion feed for quick action. To give strength and rigidity the bed is cross braced, as in engine lathes. It is mounted upon bench legs and can be set in a pan, as shown, or on a bench.



The 11 In. by 4 Ft. Stuyvesant Manual Training School Turret Lathe Built by the J. G. Blount Company, Everett, Mass.

Fan Facts and Theories.

In the chapter he contributes to the late C. M. Percy's work, soon to be published, on "The Mechanical Equipment of Collieries," George H. Winstanley, F. G. S., says on the subject of centrifugal fans of the Sirocco type:

"The most interesting feature about this fan—the Sirocco—is (if I may use the expression) that it knocks on the head many of the generally accepted theories with regard to centrifugal fans. For instance, it has been held that the velocity with which the air leaves the tips of the blades is, theoretically, the same as the circumferential velocity of the fan itself and in actual practice somewhat less. Actual measurement in the case of the Sirocco fan proves beyond the possibility of doubt that the air leaves the periphery with a velocity almost twice as great as the velocity of the fan itself. What does this mean? It means that a small fan of this type will deal with a much greater volume of air than a larger fan of any other make, while the useful effect is somewhat higher.

"Again, we have been brought to believe that the theoretical water gauge attained by any fan may be calculated by arriving at the vertical hight through which a body would require to fall in order to acquire the same velocity as that of the circumference of the fan. Having calculated this hight in feet we work out the weight of an equal column of air standing upon a base of 1 sq. ft., from which, in turn, we get the water gauge in inches. In the Sirocco fan, remarkable as it may appear, the actual water gauge is greatly in excess of this so-called theoretical or calculated water gauge and to produce a given water gauge this fan has a lower circumferential velocity than any other type of fan in existence.

"The distinctive features of the Sirocco fan are these: It has an absolutely clear inlet of practically the same diameter as the fan itself. (All other fans have the inlet much smaller in diameter than that of the revolving portion.) The blades are very short radially, being only about one-sixteenth of the fan diameter. The width of the blades, however, is greater than usual—about three-fifths of the diameter. There are a larger number of blades than are usually found in centrifugal fans, 64 being the number adopted in the Sirocco. The blades take more the form of scoops, with a forward curvature, and in working there is an entire absence of eddy current. The casing is of the usual form, spiral, with an expanding chimney.

"As an example of what the Sirocco fan can do in actual operation, and in comparison with other mechanical ventilators for colliery purposes, a fan of well-known make at a Lancashire colliery is delivering 233,000 cu. ft. per minute. This fan is 24 ft. in diameter, and the circumferential velocity 7425 ft. per minute. A Sirocco fan has recently been installed at a colliery in the north of England; it is 75 in. in diameter, and is delivering 226,000 cu, ft. per minute, with a circumferential velocity of 5770 ft. per minute."

The Bessemer Coke Company, Lewis Building, Pittsburgh, has placed a contract for the building of 200 new coke ovens at its Millsboro works, located across the Monongahela River from the Klondike coke region in Washington County, Pa. About a year ago the company built 100 ovens at this works, the coal proving to be of high quality and making fine coke. The 200 ovens to be built will replace the Martin Works ovens recently sold to the Republic Iron & Steel Company. It is probable that the development of coal lands near the Millsboro Works will be rapid and that a large number of ovens will be built next year. Julian Kennedy, the well known consulting engineer of Pittsburgh, J. H. Jennings and others own 10,000 acres of coal lands in that district, and it is expected will build a large number of coke ovens in the near future. The Bessemer Coke Company is also firing about 100 additional ovens at its Humphreys Works in the Connellsville region to meet the increasing demand for furnace and foundry coke.

A Bliss Automatic Double Slide Press.

Two views of an automatic double slide press recently designed and built by the E. W. Bliss Company, 11 Adams street, Brooklyn, N. Y., appear herewith. Rapid accurate production from ribbon stock of small sheet steel or brass articles requiring a series of operations is the purpose of the machine. It will turn out 180 finished blanks per minute, requiring a total of 1460 operations per minute, eight operations being performed at each stroke of the slide and a blank finished at each stroke. The elimination of all intermediate handlings and menace to the hands of the operator and the saving in labor and shoproom are special features of this press.

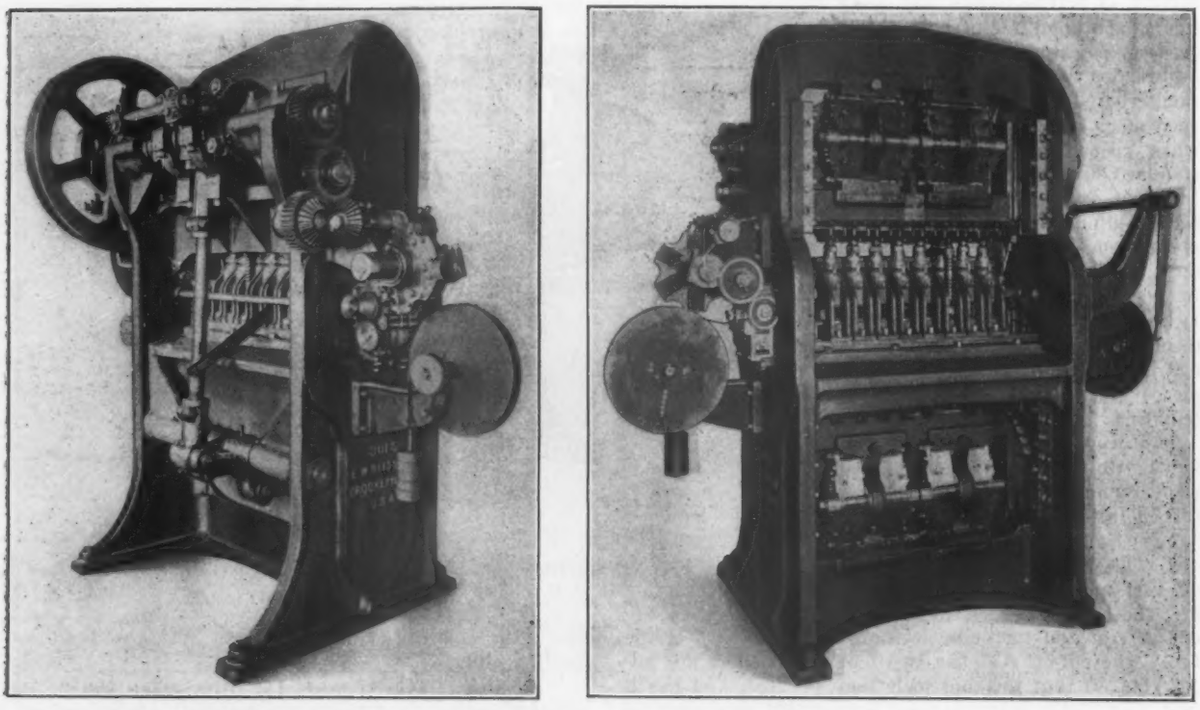
The top and bottom slides are operated by toggles driven by one shaft, controlled by a friction clutch by which the press is under instant control at any point of the stroke. An additional advantage of this type of clutch is that the press can be stopped or started while the feed is on its point of dwell, which is not the case where the conventional positive press clutch is used, due to the fact that presses so equipped stop on the top center while the feed is at its highest speed, and must necessarily stop and start with a certain amount of shock which has a tendency to strain the feed mechanism. In cases where ribbon stock is being fed this also causes some slip of the ribbon with a consequent irregularity in the feeding.

The top and bottom toggle connections are each independently adjustable, enabling the changing of the timing of the operations. In this way the press may be adjusted so that either the top or bottom slide may finish its stroke first and then dwell until the other slide continuing performs the operation, the movement of the slides in relation to each other depending on the nature of the operation to be performed. The feed is actuated by a six-point Geneva stop motion, which feeds 120 degrees and provides an ideal motion for a feed of this class. There is provided for the stock a reel with friction holdback, and for the scrap a reel with geared drive arranged with a compensating device, insuring uniform tension on the stock, regardless of the amount of scrap on the reel. The dies are each in a separate and independent subpress, and can readily be removed and replaced any number of times without danger of shearing the most delicate dies.

The stock used being in ribbons or strips of suitable width is used as a feeding medium, and in this way a very high rate of speed is attained. The stock, while passing from left to right the entire width of the press, is guided by a set of rolls on each side of the press.

When the work requires drawing operations, the drawing is done before the blank is punched out of the ribbon, thus allowing the metal to contract in every direction. To provide for this contraction and the consequent change in centers, the dies are arranged in independent subpresses, which permit of adjusting the distance between the centers of dies, to suit the distorted spacings due to the drawing operations. The blank being cut out of the ribbon after the drawing operations is forced back into the scrap by which it is carried along for the subsequent operations.

With this ribbon feed very accurate work can be produced, and since the work is always under absolute and instant control, the press can be operated at from three to four times the speed possible when the blank is loose and advanced step by step by a finger or carrying feed.



Two Views of an Automatic Double Slide Press with Ribbon Feed, Built by the E. W. Bliss Company, Brooklyn, N. Y.

Storage Battery Motor Cars.—In an article in the *Zeitschrift des Vereins Deutscher Ingenieure*, A. Giesler, chief mechanical engineer of the Palatinate Railways in Germany, gives the results of experience with storage battery motor cars on those lines. He says in conclusion: "It may be definitely asserted, on the basis of the experience of a number of years, that an accumulator motor car service can be economically successful in cases where the lines concerned are on the level and not too long, where there are suitably located charging stations at which current is produced cheaply, and where conditions are such that proper supervision of the batteries is possible. A specially favorable result shown by this service, which has been operated a number of years, is the fact that only very rarely did any sudden breakdown in the service occur. This shows that the accumulator cars are very reliable, and in this respect compare favorably with most kinds of gasoline and steam motor cars."

Business is gradually improving with the John A. Roebling's Sons Company, which has placed in operation its old rolling mill at its Trenton, N. J., plant. This mill, which has been shut down for some months, produces rods for the wire mills. The company's other departments at Trenton have been in operation, and its new plant at Kinkora, N. J., has continued in steady operation since it was started.

The Bristol Electric Time Recorder.

The automatic recording of the occurrence and duration of various operations, such as the starting and stopping of machines, the opening and closing of valves, the duration of runs, the passing of trains, &c., is the function of a new electric time recorder made by the Bristol Company, Waterbury, Conn. With this instrument it is possible to record several different operations on the same chart, and the recorder may be located a long distance from the points at which such operations occur.

Fig. 1.—A Six-Pen Bristol Electric Time Recorder.

One of these recorders arranged to record operations at six different points is shown in Fig. 1. Each one of the six pens shown on this instrument makes an independent record, continuously and automatically, and in this way six different operations may be recorded on the same chart. Each pen arm is actuated by an independent electro-magnet and battery circuit so arranged that closing the circuit causes the pen to move a certain distance on the chart. Binding posts are provided at the base of the recorder, to which pairs of wires are attached. These wires may be of almost any length, it only being necessary to have the object whose motion is to be recorded open or close the circuit whenever the motion occurs.

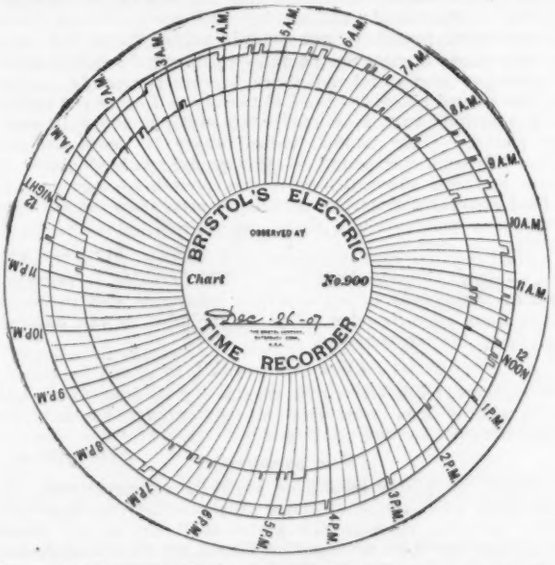


Fig. 2.—Reduced Fac-Simile of a Record Chart from a Two-Pen Recorder.

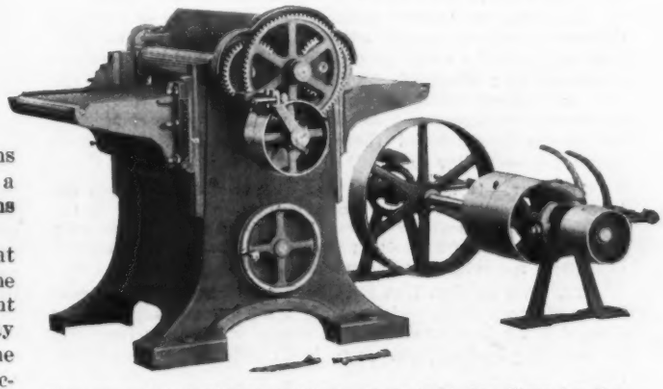
Usually these recorders are operated by a battery circuit, but any convenient circuit may be employed by inserting lamps or other resistance to reduce the voltage across each electro-magnet. The object whose motion is to be recorded is caused to make and break this circuit through any convenient contact.

These recorders have been made with as many as 12 pens. A chart from a two-pen recorder is shown in Fig. 2, which gives complete 24-hr. records of the operation of two paper machines. This record shows the time and duration of each break, and also the time required to wash the felts and put on new wires.

The New Crescent Wood Planer.

An important feature of the 18 and 24 in. wood planers made by the Crescent Machine Company, Leetonia, Ohio, and shown in the accompanying illustration, is that the frame is cast in one piece, which it is claimed insures a steady running machine and makes it impossible for it to be racked out of alignment. The bed does not slide on ways inside the frame, but is gibbed direct to the body of the frame. This construction is rigid, accessible for adjustment and not liable to clip the ends of the lumber.

The head is milled from a solid bar of steel and is carefully balanced. It is suited for two knives and is driven by a flanged pulley which is securely keyed on. The chip breaker and pressure bar are placed as close to the head as clearance will allow, so that extremely short stock may be worked. The bearings for the head are simple, and permanent alignment is insured by having their lower parts cast solid with the frame. They are lined with high speed Babbitt. To adjust for wear liners are provided, and self-closing oil covers to exclude dust. An oil chamber and capillary felts make the bearings practically self-oiling. Wherever possible the other bearings throughout the machine have self-closing oil covers.



The New Wood Planer Built in 18 and 24 In. Sizes by the Crescent Machine Company, Leetonia, Ohio.

A belt from the countershaft to a pair of tight and loose pulleys on the machine drives the feed, and a convenient belt shifter provides for starting and stopping the feed. Regularly the machine has a feed of 25 ft. per minute, but a larger pulley to give a feed of 30 ft. per minute may be had. All the rolls are made of steel. The upper rolls only are driven; the infeeding roll is corrugated. A graduated brass scale shows accurately the thickness of stock being surfaced. One revolution of the hand wheel will raise the table ⅛ in. The machine may be belted in any direction to a countershaft, above or below, to front or rear. The countershaft has drip cups, shifter fingers and a connection for a lever. The equipment furnished with each machine includes a countershaft, pair of knives and two wrenches.

The machine is made in two sizes, 18 and 24 in. The width and thickness the 18-in. size will plane is 17¾ x 6 in., and the 24-in. size, 23¾ x 6 in. The floor space, exclusive of the countershaft, required by the smaller size is 44 x 45 in. and for the larger 45 x 50 in. The weights are respectively 1200 and 1400 lb.

The United States Geological Survey, in connection with the researches of the Conservation Commission, is going to take a census of the water power of the United States. The census will be proportioned among nine hydrographic district engineers of the Survey.

THE NEW TARIFF BILL.

Text of Metal Schedule as Tentatively Revised.

WASHINGTON, D. C., November 17, 1908.—The Ways and Means Committee, as a preliminary step to the enactment of a new tariff law, is preparing a comprehensive tentative revision of the phraseology of the Dingley act for the purpose of eliminating all ambiguities, providing specifically for a large number of articles not mentioned in the present law and which have become of commercial importance since 1897, and forestalling further developments in the leading manufacturing industries of the world. No attempt is made in drafting this revised classification to fix rates, that task being deferred until after the close of the hearings now in progress.

The work of amending the phraseology of the law is not yet completed, but the text of the metal schedule has been finished, and the correspondent of *The Iron Age* is enabled to present such paragraphs thereof as have been revised, together with a brief statement of the reasons for the proposed changes where such reasons are not perfectly obvious. The amendments are indicated in italics. The paragraphs not cited have not been changed from their present form.

Amended Phraseology Suggested for New Tariff Act.

SCHEDULE C—METALS AND MANUFACTURES OF.

121. Iron ore (*except such as is used chiefly in the production of pigments and colors*), including manganiferous iron ore, and the dross or residuum from burnt pyrites, — cents per ton; Provided, That in levying and collecting the duty on iron ore no deduction shall be made from the weight of the ore on account of moisture, which may be chemically or physically combined therewith; basic slag, ground or unground, — dollar per ton.

COMMENT.—It is suggested that the provision for iron ore herein be amended so as to except iron ore chiefly used in the production of pigments or colors. This would not interfere with iron ore intended for smelting purposes. The iron ore affected is entirely too valuable to be smelted.

122. Iron in pigs, iron kentledge, wrought and cast scrap iron and scrap steel, —dollars per ton; but nothing shall be deemed scrap iron or scrap steel except waste or refuse iron or steel *in physical form as to be* fit only to be remanufactured.

COMMENT.—In view of recent conflicting decisions of the courts regarding scrap iron and steel, it is suggested that the provision be clarified by inserting the words, "in some physical form, &c."

126. Boiler or other plate iron or steel, except crucible plate steel and saw plates hereinafter provided for, not thinner than No. 10 wire gauge, *cut or sheared to shape or otherwise, or unsheared*, and skelp iron or steel sheared or rolled in grooves, valued at 1 cent per pound or less, — of 1 per cent. per pound; valued above 1 cent and not above 2 cents per pound, — of 1 cent per pound; valued above 2 cents and not above 4 cents per pound, — cent per pound; valued at over 4 cents per pound, — percentum ad valorem; Provided, That all sheets or plates of iron or steel thinner than No. 10 wire gauge shall pay duty as iron or steel sheets.

COMMENT.—It is suggested that this paragraph be amended so as to provide for the plate iron or steel whether cut or sheared to shape or otherwise, or unsheared.

127. Iron or steel anchors or parts thereof, — cents per pound; forgings of iron or steel or of combined iron and steel, of whatever shape or whatever degree or stage of manufacture, *but not machined, tooled, or otherwise advanced in condition by any process or operation subsequent to the forging process*, not specially provided for in this act, — percentum ad valorem; antifriction ball forgings of iron or steel, or of combined iron and steel, — percentum ad valorem.

COMMENT.—The change in this paragraph is suggested because of the contention between the Government and the importers as to the interpretation of the phrase, "forgings . . . of whatever shape or whatever degree or stage of manufacture"; the former insisting that this refers only to various steps or stages of heating, pressing or hammering in the process of forging, and that work bestowed on forged articles after the completion of the forging process advances them beyond the class of goods known as forgings. On the other hand, the importers' claim is that this provision includes forged articles that have been turned, or drilled, or punched, or finished, or otherwise machined.

131. Sheets of iron or steel, common or black, of whatever dimensions, and skelp iron or steel, valued at 3 cents per pound or less, thinner than No. 10 and not thinner than No. 20 wire gauge, — of 1 cent per pound; thinner than No. 20 wire gauge and not thinner than No. 25 wire gauge, — of 1 cent per pound; thinner than No. 25 wire gauge and not thinner than No. 32 wire gauge, — cents per pound; thinner than No. 32 wire gauge, — cents per pound; corrugated or crimped, — cents per pound; *all of the foregoing valued at more than 3 cents per pound*, — percentum ad valorem; Provided, That all sheets of common or black iron or steel not thinner than No. 10 wire gauge shall pay duty as plate iron or plate steel.

COMMENT.—It is suggested that sheets of iron or steel, common or black, valued at over 3 cents per pound, be also provided for in this paragraph.

132. All iron or steel sheets or plates, and all hoop, band or scroll iron or steel, excepting what are known commercially as tin plates, terne plates and taggers tin, and hereinafter provided for, when galvanized or coated with zinc, spelter or other metals, or any alloy of those metals, shall pay — of 1 cent per pound more duty than if the same was not so galvanized or coated; *sheets or plates composed of iron, steel, copper, nickel, or other metal with layers of other metal or metals imposed thereon by forging, hammering, rolling or welding*, — percentum ad valorem.

COMMENT.—The difficulty of properly classifying sheets, plates or bars composed of iron or steel in combination with other metals suggests an ad valorem duty thereon.

133. Sheets of iron or steel, polished, planished or glanced, by whatever name designated, — cents per pound; Provided, That plates or sheets of iron or steel, by whatever name designated, other than polished, planished or glanced herein provided for, which have been pickled or cleaned by acid or by any other material or process, or which are cold rolled, smoothed only, not polished, shall pay — of — cent per pound more duty than *common or black sheets of iron or steel of corresponding gauge or value.*

135. Steel ingots, cogged ingots, blooms and slabs, by whatever process made; die blocks or blanks; billets and bars and tapered or beveled bars; mill shafting *material;* pressed, sheared or stamped shapes, *not* advanced in value or condition by any process or operation subsequent to the process of stamping; hammer molds or swaged steel; gun barrel molds not in bars; alloys used as substitutes for steel in the manufacture of tools; all descriptions and shapes of dry sand, loam or iron molded steel castings; all of the above valued at 1 cent per pound or less, — per pound; valued above 1 cent and not above 1.4 cents per pound, — per pound; valued above 1.4 cents and not above 1.8 cents per pound, — per pound; valued above 1.8 cents and not above 2.2 cents per pound, — per pound; valued above 2.2 cents and not above 3 cents per pound, — per pound; valued above 3 cents per pound and not above 4 cents per pound, — per pound; valued above 4 cents and not above 7 cents per pound, — per pound; valued above 7 cents and not above 10 cents per pound, — per pound; valued above 10 cents and not above 13 cents per pound, — per pound; valued above 13 cents and not above 16 cents per pound, — per pound; valued above 16 cents per pound, — *percentum ad valorem.*

(*New paragraph.*)

Steel wool or steel shavings, if 4/1000 in. thick or thinner, — cents per pound; if over 4/1000 in. thick, — cents per pound; the weight of all bindings, wrappers and coverings other than plain wooden, shall be included in the dutiable weight of the merchandise.

(*New paragraph.*)

Diamond steel, steel grit, diamond grit, iron form, iron sand, chilled iron sand and similar articles by whatever name known, — cents per pound.

(*New paragraph.*)

Steel saw plates wholly or partially manufactured, crucible plate steel and steel plates or sheets, not specially provided for, steel circular saw plates shall pay — per pound in addition to the rate provided herein for steel saw plates; steel strips, strip steel or steel in strips, 25/1000 in. thick or thinner, whether in long or short lengths and whether drawn through dies or rolls, —. (Compare with rate for flat wire.)

(*New paragraph to be inserted under the caption of "General Provisions."*)

The terms iron plates, steel plates, plate iron and plate steel, as used in this act, shall be restricted to such articles having plane surfaces, which may, however, be checkered, corrugated or ribbed, for use as parts of constructions, but not as tools or implements in manufacturing.

COMMENT.—The changes indicated in the above paragraph appear to be necessary to provide more specifically for numerous articles not specifically mentioned or somewhat ambiguously described in the existing law.

137. Round iron or steel wire, not smaller than No. 13 wire gauge, — cents per pound; smaller than No. 13 and not smaller than No. 16 wire gauge, — cents per pound; smaller than No. 16 wire gauge, — per pound; Provided, That all the foregoing valued at more than 4 cents per pound; *all iron or steel wire covered with cotton, silk or other material;* corset clasps, corset steels, dress steels, and all flat wires, *whether in long or short lengths, in coils or otherwise, and whether drawn through dies or rolls, and all wire not specially provided for in this act shall pay a duty of not less than* — percentum ad valorem on iron or steel wire coated *by dipping, galvanizing or similar process with zinc, tin or other metal, there shall be paid* — of a cent per pound; in addition to the rate imposed on the wire of which it is made. Provided further, That articles manufactured wholly or in chief value of any wire or wires provided for in this paragraph shall pay the maximum rate of duty imposed upon any wire used in the manufacture of such articles, and in addition thereto — cents per pound, except that wire rope or wire strand shall pay the maximum rate of duty imposed upon any wire used in the manufacture thereof and — cent per pound; and provided further, That no article made wholly or in chief value of wire shall pay a less rate of duty than — percentum ad valorem.

COMMENT.—The changes suggested in this paragraph are intended to meet difficulties in classification of wire and manufactures thereof which have arisen since the enactment of the present law.

141. On all iron or steel bars or rods of whatever shape or section which are cold rolled, cold drawn, cold hammered or polished in any way in addition to the ordinary process of hot rolling or hammering, there shall be paid — per pound in addition to the rates provided in this act on bars or rods of whatever section or shape which are hot rolled; and on all strips, plates or sheets of iron or steel, of whatever shape other than the polished, planished or glanced sheet iron or sheet steel hereinbefore provided for, which are cold rolled, *cold drawn*, cold hammered, blued, brightened, tempered or polished *in any way in addition to the ordinary process of hot rolling or hammering*, there shall be paid — per pound in addition to the rates provided in this act upon strips, plates or sheets of iron or steel of common or black finish *of corresponding gauge or value.*

COMMENT.—The suggested change is designed to carry out the original intention of the existing law to levy an additional duty on strips of steel passed through the rolls so many times as to receive the same surface as would result from a special polishing or brightening process.

146. Card clothing *not actually and permanently fitted to and attached to carding machines or to parts thereof at the time of importation*, manufactured from tempered steel wire, — per square foot; all other, — per square foot.

148. Cast iron andirons, plates, stove plates, sadirons, tailors' irons, hatters' irons and castings and vessels *wholly of cast iron*, — per pound. *All castings of iron or cast iron plates which have been chiseled, drilled, machined or otherwise advanced in condition by processes or operations subsequent to the casting process, but not made up into articles, shall pay — per pound more than the rate imposed upon the castings of iron and cast iron plates hereinbefore provided for.*

152. Lap welded, butt welded, seamed or pointed iron or steel boiler tubes, pipes, flues or stays, not thinner than No. 16 wire gauge, — per pound; *cylindrical or tubular tanks or vessels, for holding gas or liquids, — percentum ad valorem; flexible metal tubing or hose, — percentum ad valorem; covered with wire or other material, — percentum ad valorem; flexible metal tubing or hose with appliances or attachments affixed thereto, — percentum ad valorem;* welded cylindrical furnaces, made from plate metal, — cents per pound; all other iron or steel tubes, finished, not specially provided for in this act, — percentum ad valorem.

(An alternative: Instead of the provision for cylindrical or tubular tanks insert this proviso:) *Provided, That no article shall be dutiable as a tube which is closed at either or both ends.*

COMMENT.—These changes are necessary to properly define tubes and cylinders, which have been the subject of much litigation.

153. Penknives, pocketknives, clasp knives, pruning knives, budding knives, erasers, manicure knives, corn knives, corn razors, *and all knives by whatever name known, including such as are denominatively mentioned in this act, which have folding or other than fixed blades or attachments*, valued at not more than 40 cents per dozen, — percentum ad valorem; valued at more than 40 cents per dozen and not exceeding 50 cents per dozen, — per piece and — percentum ad valorem; *all such cutlery, or parts thereof, wholly or partly manufactured*, valued at more than 50 cents per dozen and not exceeding $1.50 per dozen, — per piece and — percentum ad valorem; valued at more than $1.50 per dozen and not exceeding $3 per dozen, — per piece and — percentum ad valorem; valued at more than $3 per dozen, — per piece and — percentum ad valorem; Provided, That blades, handles or other parts of either or any of the foregoing articles imported in any other manner than assembled in finished knives or erasers shall be subject to no less rate of duty than herein provided for *the knives and erasers mentioned herein* valued at more than 50 cents and not more than $1.50 per dozen. Razors and razor blades, finished or unfinished, valued at less than $1.50 per dozen, — per dozen and — percentum ad valorem; valued at $1.50 per dozen and less than $3 per dozen, — per dozen and — percentum ad valorem. Scissors and shears, and blades for the same, finished or unfinished, valued at not more than 50 cents per dozen, — per dozen and — percentum ad valorem; valued at more than 50 cents and not more than $1.75 per dozen, — and — percentum ad valorem; valued at more than $1.75 per dozen, — per dozen and — percentum ad valorem.

COMMENT.—The changes indicated above are suggested by the fact that litigation has demonstrated that the present law does not specify in sufficient detail certain classes of cutlery wholly or partly manufactured now being imported.

154. Sword blades and swords and sidearms *irrespective of quality or use, in part of metal*, — percentum ad valorem.

155. Table, butchers', carving, cooks', hunting, kitchen, bread, butter, vegetable, fruit, cheese, *carpenters' bench, curriers', drawing, farriers', fleshing, hay, tanners'*, plumbers', painters', palette, artists' and shoe knives, forks and steels, finished or unfinished; *if imported without handles, if* with handles of mother-of-pearl, shell or ivory, — cents each; with handles of deer horn, — cents each; with handles of hard rubber, solid bone, celluloid, or any pyroxylin material, — cents each; with handles of any other material than those above mentioned, — cents each, and in addition, on all the above articles, — percentum ad valorem; *Provided, That no cutlery other than that provided for in this act at ad valorem rates of duty shall pay a less rate of duty than — percentum ad valorem.*

156. Files, file blanks, rasps and floats, of all cuts and kinds, 2½ in. in length and under, — cents per dozen; over 2½ in. in length and not over 4½ in., — cents per dozen; over 4½ in. in length and under 7 in., — cents per dozen; 7 in. in length and over, — dollar per dozen; *manicure files, finished or unfinished, — percentum ad valorem.*

158. Double barreled sporting breech-loading shotguns, combination shotguns and rifles, valued at not more than $5, — each, and in addition thereto — percentum ad valorem; valued at more than $5 and not more than $10, — each, and in addition thereto — percentum ad valorem each; valued at more than $10, — each; double barrels for sporting breech-loading shotguns and rifles, further advanced in manufacture than rough bored only, — each; stocks for double barreled sporting breech-loading shotguns and rifles, wholly or partially manufactured, — each; and in addition thereto on all such guns and rifles, valued at more than $10 each, and on such stocks and barrels, — percentum ad valorem; on all other parts of such guns or rifles and fittings for such stocks or barrels, finished or unfinished, — percentum ad valorem; Provided, That all double barrel sporting breech-loading shotguns and rifles imported without a lock or locks or other fittings shall be subject to a duty of — each and — percentum ad valorem; single barreled breech-loading shotguns, or parts thereof, except as otherwise specially provided for in this act, — each and — percentum ad valorem. Revolving pistols or parts thereof, — each and — percentum ad valorem. *Automatic pistols, — each and — percentum ad valorem.*

COMMENT.—Automatic pistols have become an important article in commerce and provision should be made for them.

165. Needles for knitting or sewing machines, including latch needles, — per 1000 and — percentum ad valorem; crochet needles and tape needles, knitting and all other needles, not specially provided for in this act, and bodkins of metal, — percentum ad valorem; *but no articles other than the needles which are specifically named in this act shall be dutiable as needles, unless having an eye and fitted and used for carrying a thread. Needle cases or needle books furnished with assortments of needles or combinations of needles and other articles shall pay duty as entireties according to the component material of chief value therein.*

166. Steel plates engraved, stereotype plates, electrotype plates and plates of other materials, engraved or lithographed, for printing, — percentum ad valorem; *plates of iron or steel engraved or fashioned for use in the production of designs, patterns or impressions on glass in the process of manufacturing* plate or other glass, — *percentum ad valorem.*

170. Umbrella and parasol ribs and stretchers, composed in chief value of iron, steel or other metal, in frames or otherwise, — percentum ad valorem; *tubes for umbrellas, wholly or partially finished, — percentum ad valorem.*

175. Bronze powder *and brocades*, — cents per pound; *flitters, — cents per pound; metallics, — cents per pound;* bronze or Dutch metal or aluminum, in leaf, — per packages of 100 leaves.

182. Lead dross, *including all dross containing lead*, lead bullion or base bullion, lead in pigs and bars, lead in any form not specially provided for in this act, old refuse lead run into blocks and bars, and old scrap lead fit only to be remanufactured, all the foregoing — cents per pound; lead

in sheets, pipe, shot, glaziers' lead and lead wire, — cents per pound.

183. *Metalliferous* mineral substances in a crude state, and metals unwrought, *whether deemed capable of being wrought or not*, not specially provided for in this act, — percentum ad valorem; monazite sand and thorite, — cent per pound.

(*New paragraph.*)

Chrome metal, chromium metal, ferrochrome, ferromanganese, ferromolybdenum, ferrophosphorus, ferrosilicon, ferrotitanium, ferrotungsten, ferrovanadium, manganese metal, molybdenite, molybdenum, spiegeleisen, tungsten or wolfram metal, — percentum ad valorem.

COMMENT.—The changes suggested in the above paragraph are intended to provide adequate rates of duty for a large number of valuable ferro alloys which heretofore under the conflicting decisions of the courts have been classified for duty either at 20 per cent. ad valorem or by similitude to ferromanganese at $4 per ton.

184. Mica, unmanufactured or thumb trimmed only, — cents per pound and — percentum ad valorem; mica, cut or trimmed, — cents per pound and — percentum ad valorem; *mica plates or built-up mica, and all manufactures of mica or of which mica is the component material of chief value, — percentum ad valorem.*

(This paragraph should be transferred to Schedule B.)

185. Nickel, nickel oxide, alloy of any kind in which nickel is a component material of chief value, in pigs, ingots, bars, *rods, plates,* sheets *and strips cut from sheets, but not rolled or drawn,* — cents per pound.

186. Pens, metallic, except gold pens, — cents per gross; *with nib and barrel in one piece, — per gross.*

187. Penholder tips, penholders or parts thereof, and gold pens, — percentum ad valorem; *fountain pens, stylographic pens, and ink pencils, — percentum ad valorem. Provided, That pens and penholders shall continue to be classified separately for duty purposes, but so-called combination penholders, comprising besides a penholder, a pencil, rubber eraser, automatic stamp or similar attachments, shall be assessed for duty as entireties according to the component material of chief value therein.*

191. Watch movements, whether imported in cases or not, if having not more than 7 jewels, — each; if having more than 7 jewels and not more than 11 jewels, — each; if having more than 11 jewels and not more than 15 jewels, — each; if having more than 15 jewels and not more than 17 jewels, — each; if having more than 17 jewels, — each, and in addition thereto, on all the foregoing, — percentum ad valorem; watch cases and parts of watches, including watch dials, chronometers, box or ship, and parts thereof, clocks and parts thereof, not otherwise provided for in this act, whether separately packed or otherwise, not composed wholly or in part of china, porcelain, parian, bisque or earthenware, — percentum ad valorem; all jewels for use in the manufacture of watches or clocks, — percentum ad valorem; *mechanisms other than watches, clocks or chronometers, of which watch or clock movements are part, shall pay duty as manufactures of metal.*

192. Zinc in blocks or pigs, — cents per pound; in sheets, — cents per pound; *in sheets coated or plated with nickel or other metal, or solutions, — cents per pound;* old and worn out, fit only to be remanufactured, — cent per pound; *dust or zinc powder, — cent per pound; ore, —.*

COMMENT.—There have been considerable importations of goods intended to be covered by the proposed amendments to the above paragraph, which should be more specifically provided for.

193. Articles or wares not specially provided for in this act, composed wholly or in part of iron, steel, lead, copper, nickel, pewter, zinc, gold, silver, platinum, aluminum or other metal, and whether partly or wholly manufactured, — percentum ad valorem.

(*New paragraph covering alloys.*)

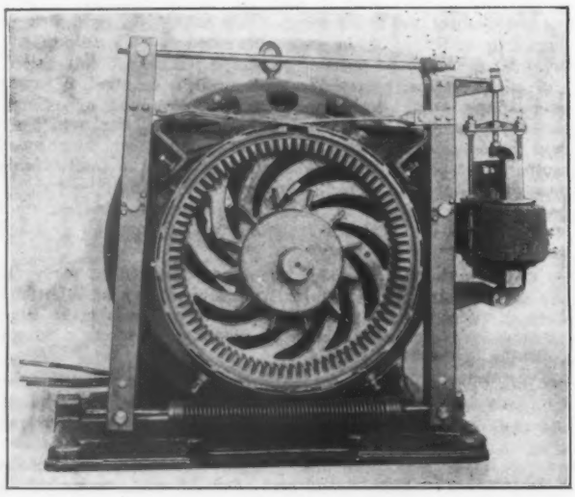
Alloys and other mixed metals in lumps, pigs, blocks, bars, cakes, sheets or powder, not specially provided for, — percentum ad valorem. W. L. C.

A State Employment Bureau Asked in Pennsylvania.—A movement for the establishment in Pennsylvania of a State Bureau of Labor, to facilitate the employment of men in times of depression and to enable manufacturers to procure workmen in times when hands are needed, has been started by John L. Rockey, chief of the State Bureau of Industrial Statistics. Mr. Rockey will ask the Legislature, which meets January 4, to pass such laws as will enable the bureau to be operated as a branch of his department. Mr. Rockey treats of the subject at length in a report made to the Governor. Similar efforts have been made before, but owing to the experience of State officials in the recent industrial depression when they were importuned to aid in securing work for men and to the promises of support from influential labor leaders, it appears that there is now a chance for such a bureau being created.

A New Westinghouse A. C. Motor Brake.

There are many magnetically operated direct current motor brakes, but fewer successful ones for alternating current motors. In the latter a considerably greater expenditure of energy through the electro magnets is required for a given breaking effect, and the flywheel effect of the rotor of an alternating current motor is greater than for the same size direct current motor. When alternating current is used the magnet core must be laminated, which increases the cost of construction.

An alternating current brake which is claimed to satisfactorily meet the conditions is being introduced by the Westinghouse Electric & Mfg. Company, East Pittsburgh, Pa. This brake is described as simple and strong in construction and reliable in action; it is self-contained, and is readily applied and easily adjusted. The brake is known as the PB type and is intended for use on Westinghouse two and three phase induction motors of from 5 to 100 hp., 25, 40 and 60 cycles. The braking action depends on the contraction of a coiled steel spring.



The PB Type Alternating Current Motor Brake Made by the Westinghouse Electric & Mfg. Company.

Because of its construction the brake will operate equally well with the motor tilted at a considerable angle from the horizontal position, as on roller lift draw bridges. The cast iron brake shoes are held against the brake wheel by steel bands. The two vertical pivotal brake beams are connected at the top by a tie rod and at the bottom by a coiled steel spring, and a polyphase solenoid operating magnet is attached to the brake beams by a lever. The ends of the brake bands are attached to the beams above the pivots; the spring tends to draw the lower ends of the beams together, thus drawing the band and shoe against the wheel. The friction of the wheel against the shoes tilts the beams through a small angle until they strike against lugs on the frame work. These lugs are above the pivots and are so placed that when the beams press against them the tops are separated and the brakes more firmly set by the motor itself. A very heavy braking action is thus obtained with a comparatively light spring and magnet. When the motor is operating the current passes through the coils, the core is pulled down, the brake is released and the spring elongated. On stopping the motor the brake circuit is opened, allowing the spring to contract and apply the brake.

The Brazil Factory Promoting Club has been organized and incorporated at Brazil, Ind., the purpose being to induce factories to locate in that city. The directors are Daniel H. Davis, Dudley W. Brattin, Thomas P. Jones, Adelbert Stewart, William Leavitt, Sr., William C. Hall and Ray Shattuck.

The Kelly Adjustable Floating Reamer.

A unique adjustable reamer that may be used either floating or rigid, and in the latter state as a boring tool, has been brought out by the Kelly Tool Company, Cleveland, Ohio. One of the special advantages of the reamer is that with a comparatively few individual tools, 17 to be exact, any hole from 1 in. to 5¼ in. in diameter can be

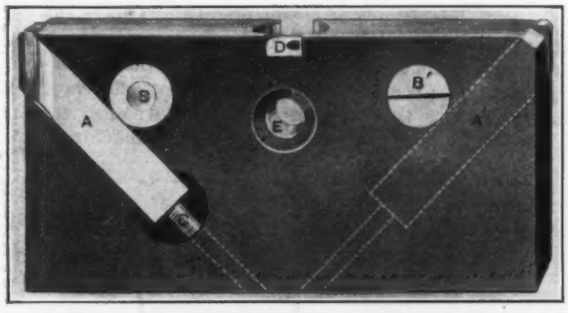


Fig. 1.—The Cutter Holder and Inserted Blades of the Kelly Adjustable Floating Reamer.

reamed, as each one covers a range of ¼ in. Each reamer is adjustable to 1-10,000 in. The cutter, or strictly speaking the cutter holder, is illustrated in Fig. 1, and is a rectangular block with two high speed steel cutters inserted at an angle of 45 deg., and adjusted by screws at their base. The outer ends of these cutters form the working edges of the reamer and by virtue of

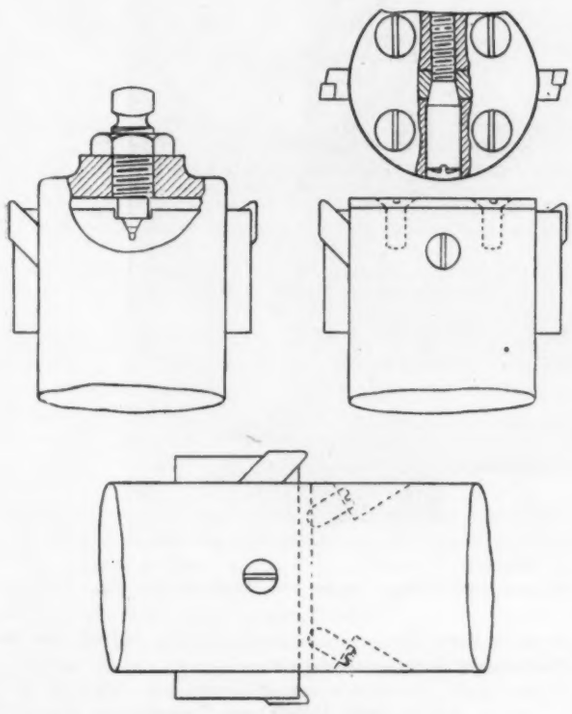


Fig. 2.—Different Ways of Supporting the Kelly Adjustable Reamer.

their material will remain sharp and accurate to size for a considerable length of time, even when in constant use.

Fig. 2 shows three manners in which the cutter holder can be supported. The upper left hand view shows the ordinary arrangement, where the reamer is used either as a floating reamer or a rigid one. In the latter case the set screw in the end of the bar is provided with a point which engages in a countersink in the ends of the cutter holder. Where it is necessary to ream to the bottom of a hole a bar of the form shown in the upper right hand corner of Fig. 2 is used. In this case to make the reamer a rigid one, a set screw with a taper shoulder is passed through the side of the bar and engages a tapered hole through the side of the cutter holder. The cutter holder is similarly supported when the tool is used in a boring bar with the extended end of the bar guided in a bushing. In the latter arrangement the tool is substantially a boring bar.

It is recommended that the reamer be used as a rigid reamer on porous castings or where openings exist, using the pilot bar with the bushing guide. The cutters, when adjusted to the required size, are locked by the clamp screws shown passing transversely through the holder. The tool is applicable to any turret machine, lathe, boring mill or drill press, and will be seen to be of very universal nature, simple construction and easily set and adjusted.

Indiana Manufacturing Activity.

The passing of the election has given an impetus to manufacturing in Indiana. The Western Motor Works, Logansport, has received an order for motor engines from an Eastern automobile manufacturing company, to cost $100,000. It is completing a large addition to its plant. The Interstate Automobile Company, Muncie, with its buildings only partly completed, and a small amount of its machinery installed, has begun work on its first machines, which it will have completed in time for the auto show in New York in January. The main building is 200 x 440 ft., constructed of steel, iron, brick, cement and glass, the last named in profusion. Thomas F. Hart, manager and chief stockholder said: "We have tried to make it the best-lighted, best-ventilated, and best-heated plant of the kind in the country." It will give employment to 400 men when completed.

The Ontario Silver Company, Muncie, one of the largest silverware manufacturers in the West, has completed a new forging department, and is constructing a finishing factory. The Indiana Bridge Company, Muncie, has begun work on a contract for 1100 tons of structural steel. Kitselman Bros., who have two factories in Muncie, have received orders for 25 carloads of wire. The Arcade File Works, Anderson, subsidiary to the Nicholson File Works, Providence, R. I., resumed operations in full November 9, employing 600 men, after being on short time since the panic. The plants of the American Steel & Wire Company and the Lambert Automobile Company are also on full time again.

The Maxwell-Briscoe Motor Company, Newcastle, has increased its force by 100. Plans are being prepared for enlarging the plant of the American Insulating Material Company, Alexandria. The Beeler Mfg. Company, the first of the new industries brought to Alexandria by the Industrial Club, began operations November 10.

The Light Inspection Car Company, Hagerstown, manufacturer of railroad inspection cars and automobile engines, has received an order for 6000 engines. The Modern Concrete Company, Terre Haute, will establish a plant at Linton to manufacture machines for making concrete blocks.

The New England Foundrymen's Association.

At the monthly meeting of the New England Foundrymen's Association at the Exchange Club, Boston, November 11, the report of the Committee on Shortages of Pig Iron and Coke was received and discussed, and then laid over until the next meeting. The report has been outlined in full detail in *The Iron Age;* its chief recommendation is the weighing of the materials on railroad scales at point of destination. After dinner Capt. Godfrey L. Carden gave an interesting talk on his observations among the machine shops and foundries of Europe during his investigation for the Department of Commerce and Labor. Vice-President W. A. Viall presented resolutions addressed to Secretary Straus of the Department, thanking him for the presence of Capt. Carden, heartily indorsing the work as performed by him, and recommending its continuance. President Henry F. Arnold was in the chair.

A Newton Double-Spindle Drill.

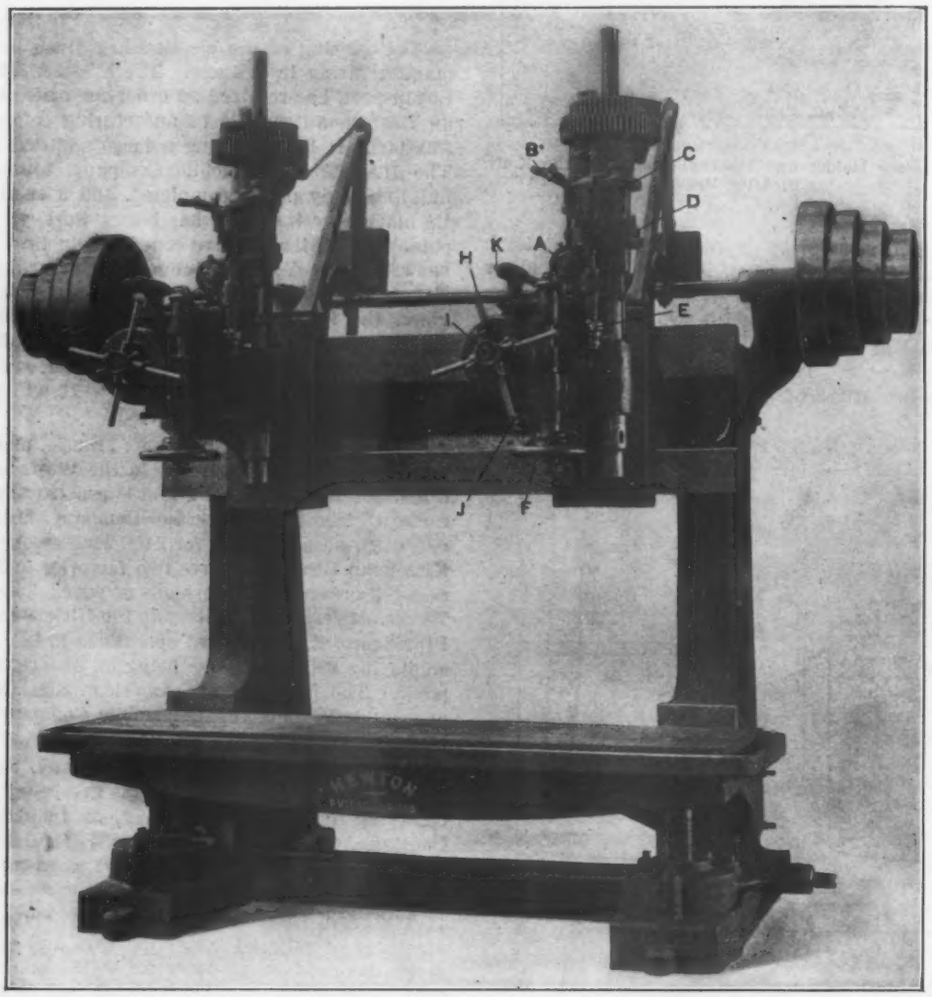
A new double-spindle drilling machine recently designed by the Newton Machine Tool Works, Inc., Philadelphia, Pa., is shown in the accompanying illustration. The spindles of this machine are 2 in. in diameter, are counterweighted, and have a vertical adjustment of 12 in. by hand or power feed. They have three changes of geared feed with adjustable automatic release, and have four changes of belt speed, which are doubled through gearing, giving eight changes in all. The drive for each head is independent, permitting of the operation of one or both spindles as desired.

The horizontal main driving splined shafts, on which the cone pulleys are mounted, are connected by bevel gearing to the saddle splined shafts A, which in turn drive a bevel sleeve gear (mounted on the saddle), through which motion is transmitted to the spindle sleeve gears by an auxiliary shaft. The spindle sleeve gears have ratios of 1 1-3 to 1 and 3.11 to 1, giving two gear changes for each of the belt speeds. The levers B operate the clutches engaging or disengaging either pair of gears.

The feed motion taken from the spindle sleeve C is transmitted through the pull pin gears D, the worm clutch E, the hand worm shaft F and the friction clutch shaft H, from which the rack gear is driven. Clutch E being disengaged, rapid vertical adjustment to the spindle is obtained by the pilot wheel H and slow vertical adjustment by the hand wheel F, when the friction clutch is engaged by the knob I. Release of the feed is obtained by a dog, which can be set for any predetermined length of feed within the capacity of the machine; this is fitted in a groove in the spindle, tripping the lever to disengage the feed clutch E.

The saddles have independent hand adjustment on the rail by means of a pinion operated by the crank hold J, from a minimum distance of 12 in. to a maximum of 60 in., and the spindle saddles can be adjusted on the arms by a screw, with a crank hold, K, from a minimum distance of 8 in. to a maximum of 17 in. from the face of the rail. The work table is 20 in. wide by 6 ft. 5 in. long, and is entirely surrounded by an oil pan. It has a hand elevation of 6 in., giving a maximum distance of 36 in. and a minimum distance of 18 in. from the work table to the bottom of the spindles.

The machine is of very substantial construction, the bearings are bronze bushed where necessary and all feed gears and clutches are of steel. The chief aim in the design of this tool has been the concentration of control and the development of ample power to drive the Celfor and similar high speed drills to their highest efficiency. A machine of this type has recently been furnished the H. K. Porter Company by the builder. The machines can be built with two or more saddles on a rail of any desired length between uprights.



A New Double-Spindle Drilling Machine Built by the Newton Machine Tool Works, Inc., Philadelphia, Pa.

A Large Whiting Cupola.

The No. 12 cupola built by the Whiting Foundry & Equipment Company, Harvey, Ill., is notable chiefly on account of its size, but it has some modifications in construction, which on this account were required. The shell of the cupola is 108 in. in diameter, with a wind box 130 in. in diameter, and 10½-in. lining. It has a melting capacity of from 27 to 30 tons per hour. The blast is admitted through two rows of tuyeres, eight in each row, which are flaring in shape, and admit the blast through an expanded opening into the cupola. The discharge opening being nearly double that of the intake causes better distribution of the blast, and softening of its force.

The large dimensions of this cupola, and the consequent great weight to be sustained, made necessary some changes in the form of construction of the bottom plate

and platform supports. These are constructed entirely of plates and structural steel, and consist of a heavy steel plate, securely riveted to the shell and wind box sheets. This plate is supported by a bottom frame, formed of heavy steel beams, riveted together, to which it is securely bolted, instead of the usual curved iron supporting columns. It was necessary in this case to substitute straight cast iron columns of circular hollow section, each of which is provided with a large frame, making the separate use of a base plate unnecessary.

A departure from usual construction is noticed in the bottom doors, the hinge plates of which are steel castings, riveted to a structural steel frame. Owing to the hight required for free clearance of the bottom door, the cupola is provided with an operator's platform built of structural shapes and supplied with a checkered plate floor guarded by substantial hand rails. Another feature presented in this construction is the safety tuyere, which is provided with a spout projecting through the shell of the wind box. This spout is lined, and is provided with the usual safety slide, and is so located as to be always under the eye of the cupola tender.

It is claimed that this is the largest standard foundry cupola offered by any manufacturer in this country. Two of this size were recently shipped to the Standard Cast Iron & Pipe Foundry Company, Bristol, Pa.

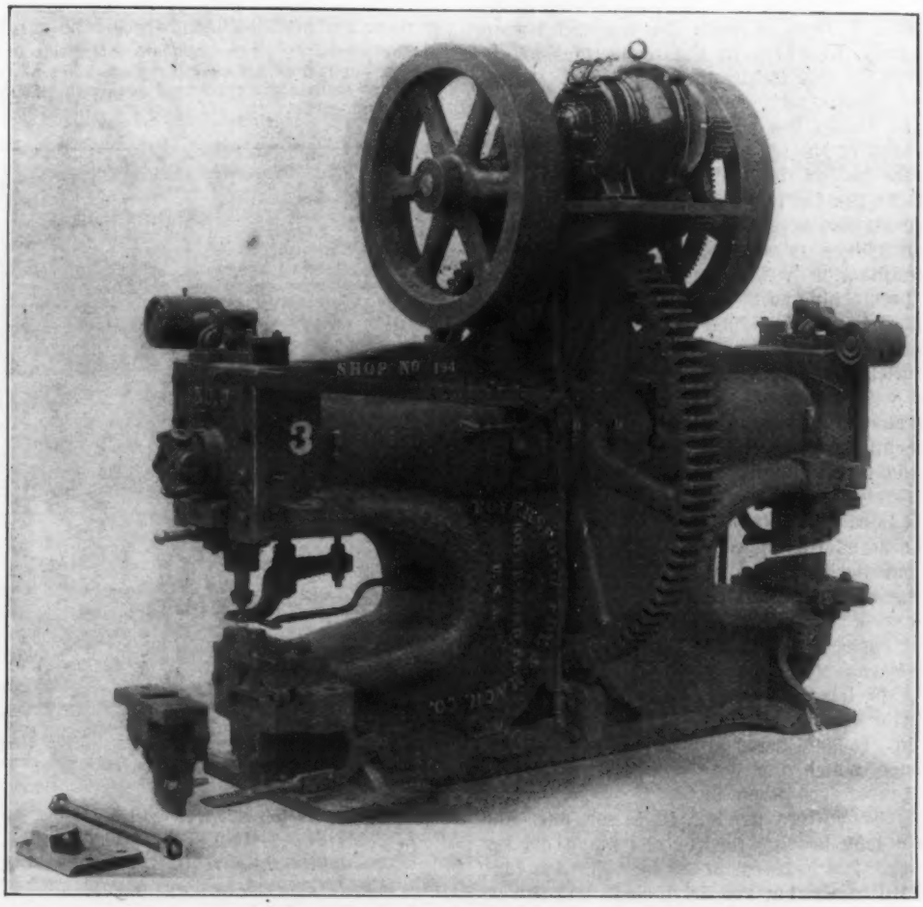
The Chamber of Commerce of Coffeyville, Kan., has completed arrangements with A. Stuart Fenzel of Middletown, Ohio, for the erection of a rolling mill at the former city to employ from 350 to 400 men, with a payroll of $350,000 per year. It is understood that the new company will manufacture structural steel, bridge work and sheet iron.

The Elkhart Motor Car Company, Elkhart, Ind., has completed its plant and is making its 1909 machines. The company was incorporated in April with $100,000 capital stock. The officers are: W. W. Sterling, president; C. L. Monger, vice-president; F. O. Hudson, secretary, and E. C. Crow, treasurer.

A New Heavy Royersford Punch and Shear.

In the nearly 20 years that the Royersford Foundry & Machine Company, Royersford, Pa., has been building punching and shearing machinery it has never before produced a machine with a deeper throat than 18 in. The demand for machines of a heavier type and greater capacity was the result of the designing and building of the new No. 3 punch and shear herewith illustrated, which can be furnished with 26 or 32 in. throats on both sides, and by means of a 4-in. extension on the punch side, the total depth of throat on that side can be increased to from 30 to 36 in. The machine follows closely the design of the usual type of Royersford punch and shear, but has been made heavier throughout to meet the requirements of increased service.

The machine is motor driven, either direct or alternating current motors being used, of from 5 to 7½ hp., having a speed of 110 rev. per min. Geared direct, such a motor will drive the machine at the rate of 20 to 25 strokes per minute.



The No. 3 Punch and Shear Built by the Royersford Foundry & Machine Company, Royersford, Pa.

The size and weight of the frame of the machine has been increased in proportion to the increased strain, the machine shown in the cut having a shearing capacity 10 x 1 in. flat, and 2 in. round, with a punching capacity up to 1½ in. in 1-in. iron. The machine is compactly built, weighs 18,000 to 21,500 lb., according to the depth of throat, and occupies a floor space of 10 x 5 ft. Each side of the machine can be operated independently of the other or they may be operated together if desired. The removable lower jaw on the punch side makes the machine particularly adaptable to such work as punching I beams and channels. While the machine illustrated is equipped with motor drive, it can be furnished with belt drive if desired.

The American Mining Congress will hold its eleventh annual session at Pittsburgh, Pa., December 2 to 5, inclusive. The attendance will comprise delegates appointed by the President, governors of States, mayors of cities and towns, boards of trades, mining organizations, engineers' associations, &c.

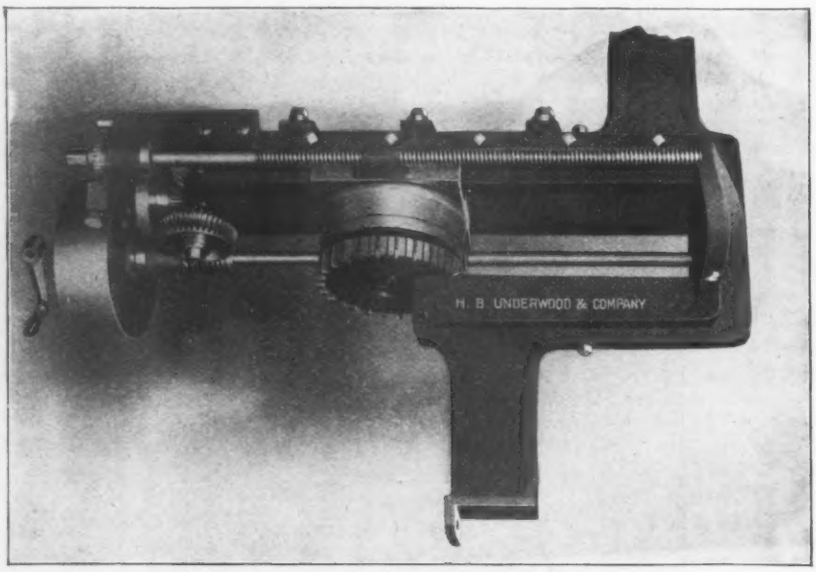
The Underwood Truck Side Frame Facing Machine.

A portable machine for truing up the pedestal bearings on car truck frames after they have become worn out of true, is a new product of H. B. Underwood & Co., Philadelphia, Pa. The tool is strong and powerful, and uses a milling cutter with inserted high speed steel blades, which can be of various diameters, and has an in-and-out adjustment of 1½ in., allowing for different width jaws and also for the depth of the cut. The driving is through a worm and worm wheel geared 42 to 1, giving great power with the smooth operation peculiar to this type of gearing. The feed is so arranged that a great many different feeds can be used from very fine to very coarse, to suit the conditions.

The bed of the machine carrying the sliding head and milling cutter is in the form of a chuck, as shown in the illustration, with T slots on both the top and bottom edges on the back, in which fit the projections of the clamps that hold the tool rigidly to the pedestal. In the center of these clamps, adjusting screws are fitted that go through and clamp the whole device to the back of the leg without springing the bed or the work to be milled. At the top and bottom edges are six set screws for holding the machines edgeways; these in conjunction with the clamps hold the machine so firmly to the work that it practically becomes one piece.

Either parallel or tapered jaws can be milled with this tool. By placing wedge shaped pieces on the chuck the machine will mill the side having the taper equally as well and accurately as the straight side. Hence it is easy to establish and maintain a standard. In very wide jaws a parallel piece can be used in the same manner, giving the tool a very wide range of work.

The regular cutter is 8¾ in. in diameter, and is capable of taking a deep cut; its large diameter leaves very little circular corner, only about ¼ in. It is adjusted by a socket wrench which fits into and operates a cross feed screw in the center of the cutter, moving it in or out, and still retaining a long bearing for the shaft and driving device. The head has a travel of 20 in. The machine is belt driven ordinarily, but the drive shaft end can be fitted to use an air drill or power from any portable source. Various sizes will be built to meet requirements, and it is believed the machine will be found very useful for other kinds of work than that for which it was originally designed, milling the jaws of car truck pedestals.



A Portable Machine for Facing the Pedestal Bearings of Car Truck Frames, Built by H. B. Underwood & Co., Philadelphia, Pa.

Robert W. Hunt & Co., consulting and inspecting engineers, 1121 The Rookery, Chicago, have been awarded by the Chicago & Northwestern Railway Company the inspection of the structural materials entering into its new Chicago terminal station, of which the steel will amount to about 24,000 tons. The same firm has been given the inspection of the steel to be used in the new Blackstone Hotel, now being erected at the corner of Michigan avenue and Hubbard court, Chicago.

Contracts for the building of 10 vessels at lake shipyards are already on the books and further business is pending. The American Shipbuilding Company has three steel freighters under contract, the Great Lakes Engineering Works has two and the Toledo Shipbuilding Company one. The Great Lakes Engineering Works will build two package freighters and two passenger steamers are under construction, one at Toledo and the other at Manitowoc.

The Safety of the Queensboro Bridge.

In a review of the reports of the firm of Boller & Hodge and of Prof. Wm. H. Burr of Columbia University on the new Blackwell's Island or Queensboro Bridge, in New York City, the *Engineering News* says that while for over a year the safety of this bridge has been a matter of grave doubt, the publication of the reports "reveals conditions of overstress and consequent weakness in the bridge never before suspected, in addition to the anxieties regarding the compression members." Referring to Professor Burr's recommendation that the Bridge Department should have made and tested to destruction not less than six pairs of structural steel compression members similar in cross section to typical compression members of the Blackwell's Island Bridge and as large as can be tested in the largest testing machine in this country, it asks, "Why go to this trouble and expense if these compression members are so safe?" and adds:

Professor Burr's recommendation for tests is good, as far as it goes, but it does not go far enough. Let us frankly face the fact that neither the public nor the engineering profession can have confidence in the safety of the Blackwell's Island Bridge until some of its full size members are tested, so that it can be known what their margin of strength really is.

The *Engineering Record* comments on the reports as follows:

It would hardly be necessary to print these documents in full, were it not for the fact that by selecting portions from each of them, their authors have been made to state things regarding this bridge which are unwarranted by the sense of the reports in their entirety. Both reports agree that the structure can be made ready for use, except by elevated trains, in a short time, and it is manifestly desirable to have this done. It is more important to let the bridge be put to use, as recommended in both reports, than to fuss around determining what past administration of the Department of Bridges is responsible for the fact that the strain sheets for the maximum theoretical loading prescribed by the specifications show excess strains in a number of members, all of which are discussed in the reports. Just where the responsibility lies for the actual defects of the structure as it stands is a matter of little importance compared with the fact that under the present system of carrying out great undertakings like this it is impossible for one man to be responsible from the beginning to the end of the work.

One of the largest mixers ever installed in a steel plant is being constructed by John Mohr & Sons, Chicago, for the Ensley plant of the Tennessee Coal, Iron & Railroad Company. This mixer will have a capacity of 600 tons and is 43 ft. 1 in. over all across the top, 27 ft. in width and 21 ft. 6 in. high. It is the third vessel of the kind built for this interest by John Mohr & Sons, who have the general contract for construction and erection, the other two already installed being of 300 tons capacity each. Besides this work two mixers for the new Gary plant of the Steel Corporation have just been completed.

Foundry Cupola Practice.

At the meeting of the Detroit Foundrymen's Association, at Detroit, Mich., October 22, W. E. Riepen of the Detroit Testing Laboratory read a paper on "Cupola Practice." The necessity of dry coke was one of the first points discussed. As there is apt to be a good deal of moisture in the coke, particularly in winter, the necessity of determining these varying amounts and making the proper adjustment of the coke charge was emphasized. The writer suggested weighing out, say, 10 lb. of the wet coke and drying it in a hot oven. The loss in weight represents the amount of water that was present. Extra coke should be charged to take care of the moisture, so that when the coke descends in the cupola to the melting zone there will be the requisite amount to do the work intended. The coke used to form the bed before lighting up should by all means be thoroughly dried.

The question of sulphur in the coke was touched upon and the writer than passed to considering the method of charging. When the coke bed in the melting zone becomes uneven it can be best restored to uniform hight by adding a few hundred pounds of extra coke over the weak spot, when only half the regular iron charge is in the cupola. This insures the coke being placed and retained in proper position. In a short time this extra coke will be down to the melting zone, and will materially rebuild the bed.

The Use of Limestone.

A complete chemical analysis of limestone was suggested to make sure that the stone contains a minimum of silica. Too much stone is as bad as too little, or worse, since repeated large doses of limestone may cause the cupola to burn through the shell. A case was recalled in which a 100-in. cupola lined to 81 in. at the melting zone was burned through the shell. The hole, which was about 4 in. above the wind box, was stopped with mud and the outside cooled by a stream of water. Then 16 or 18 lining brick were placed in the cupola on the top of the iron charge, over the place where the iron had broken out. These brick descending finally lodged in the depression of the lining, where they were found the next morning. The heat was finished successfully, and the blast had been off but 10 minutes. A new car of limestone had been received that day and it turned out to be a much richer stone than had been used. The liberation of carbon dioxide as the limestone reaches the heated portion of the cupola often causes the stone to "pop." If this popping occurs near the charging door it shows that the heating zone is too high, and that a great deal of heat is going up the stack. To remedy this, it is best to reduce the blast pressure and charge more compactly. The character of the slag depends not only upon the amount of limestone charged but upon the way the cupola is working. If the mixture carries a large percentage of sulphur which requires, say, 100 lb. of stone to produce a low sulphur iron and the amount of stone is dropped to 40 or 50 lb. or less, the iron will be changed from soft to hard or even white iron—reference being had to heats of 10 or 12 hours' duration, where precautions need to be taken to keep the quality of the iron the same.

Excessive Blast.

With some references to the use of brick for lining and to the care needed in the preparation of clay for patching up, the paper passed to the consideration of the blast. As 150 cu. ft. of air is required for every pound of coke burned to complete combustion, and as in good practice a pound of coke will melt 9 lb. of iron, about 32,000 cu. ft. of air will be required per ton of iron melted. If the rate of driving puts more air into the cupola than is required for melting, more heat than usual will pass out through the stack, and in such cases additional fuel is of no benefit, since the amount of fuel that can be used is limited to the dimensions of the cupola. The pressure should seldom be higher than 18 ounces per square inch, and less is desirable, say, 14, or even 12, ounces. To determine the proper blast pressure for a given cupola, samples should be taken of the gases about a foot below the charging door and a chemical analysis made. This sampling should be done while the cupola is running normally, and should extend over two or three days. When once the proper maximum pressure is ascertained, it should be a strict rule never to exceed that amount. More uniform iron is secured, and more economical melting. Assuming that for melting 100 tons a day 3,200,000 cu. ft. of air is required, we may suppose that 1,600,000 cu. ft. of air above this amount is forced into the cupola. Putting the temperature at which the air leaves the charge at 325 degrees Fahrenheit, and the temperature of the blast entering the cupola at 25 degrees Fahrenheit, reducing the excess air to pounds, multiplying by specific heat and dividing by 12,000 B.t.u., it is found that it takes 760 lb. of dry coke to supply the heat carried away by this excess blast. In a year, if such a rate were maintained, the fuel waste would amount to 228,000 lb., enough to melt 1026 tons of iron. To avoid fuel waste through excess blast a record of working conditions day by day should be kept and plotted.

Cupola Mixtures.

Taking up the subject of iron mixtures, the speaker observed that the tendency among foundrymen is to use large percentages of pig iron, some managers going so far as not to allow the use of their own scrap. However, quality can be obtained without confining one's self to pig iron exclusively; in fact, some mixtures are much better without a large amount of pig iron. One of the largest foundries in the country making a high class article seldom has as much as 25 per cent. of pig iron in its charge, yet the product withstands shocks and strains that few castings are required to meet. By chemical analysis many seemingly impossible things are accomplished. At one foundry making car wheels a saving of $80,000 a year was made by carefully watching market prices of material and employing a chemist to calculate the mixtures. If one kind of scrap increased in price the percentage of that kind was decreased, and a low priced scrap substituted. Chemical analyses of the castings were made at once, and any necessary corrections in the mixture were possible.

A few important points in foundry metallurgy were brought out. The carbons are controlled largely by the silicon. Sulphur neutralizes the effect of silicon on the carbon. Manganese is antagonistic to the action of sulphur, and may even neutralize a large proportion of it. Phosphorus is there by right of way, and resists all efforts at elimination. Silicon should be present to some extent, in order that the carbons may become separated. In chilled castings, for frictional wear, sulphur should be fairly high in order to produce a very hard wearing surface. For car wheel work, sulphur may be as high as 0.180 per cent., and not be detrimental, but for soft work the sulphur should be kept quite below 0.10 per cent. Low sulphur permits the silicon to separate the carbons, or strictly speaking, allows more hardening carbon to change to graphitic, which might as well be called softening carbon. Each of these elements has an effect on the shrinkage of the castings. One striking peculiarity in this connection is the great influence of combined carbon on shrinkage. In no other element do we find so great a power over shrinkage. Increasing combined carbon increases shrinkage. Manganese reduces it, as does silicon. Sulphur also increases it, but may be controlled somewhat by manganese. Without going any further into the effects of the elements on the physical qualities of the metal, I would say that to be able to produce good castings, an understanding of these effects should be obtained. It is by this means that the status of grey iron may reach the high standard that cast steel has attained. There are no less possibilities for grey iron than for steel, but it will require the united efforts of intelligent men to raise the standard of iron castings to a point approaching the quality of steel castings. Careful attention to detail work in and around the cupola will very greatly tend to a more uniform product. The time will then not be far distant when the cupola will force steel castings to find new pastures.

THE IRON AGE

Established in 1855.

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The Automobile and the Alloy Steels.

In solving the problems of the automobile builders, notably in getting the requisite combination of strength with limited space and weight, important developments have been accomplished which have a bearing on general machine construction, especially in the possibilities offered for future design. Inventive genius was forced to overcome difficulties which had never been encountered hitherto, except, possibly, in a limited way. One of the latest achievements has been the manufacture, at comparatively moderate prices, of gears which will stand the tremendous strains of a gear drive where the older method of transmission by chain and sprocket has been discarded.

The inability to place entire reliance on materials has been a serious obstacle to automobile design. The best gears were formerly imported from France, at high cost; but American experts have made rapid strides in the development of alloy steels for automobile purposes. Various treatments of the metal have proved successful to a greater or less degree. The case hardening process has been worked out into practical usefulness. The result is the accomplishment of the chief aim of the builder of high power cars—reliability, combined with a concentration into small space of mechanism conveying large units of power.

The chemist is playing an important part in this work. Not only have his services been necessary in discovering the alloys which give the desired results, but in some establishments he is constantly employed in testing the steel that enters into the construction of working parts which have to withstand the severe strains. The automobile must be built to stand. A poor piece of steel may make serious trouble. The reputation of the car may suffer; the user may meet with serious accident. Therefore very exact knowledge of materials is required. With some concerns it is not considered enough to analyze by sample; each individual piece must be tested and rejected if not within the required limits. One prominent manufacturer of automobile parts analyzes not only the surface of each bar, but the core as well, so that the degree of segregation, usually existing to some extent in the alloys, may be known. Parts are also subjected to severe physical tests.

The results of these researches and discoveries are finding their way into machine tools and other mechanisms. There are various uses to which the new alloys can be put in the machine shop. They are already present in the high speed steels. In the majority of cases in machine design strength may be secured by increased size of cheaper materials. But there are occasional instances where it would be a practical advantage to reduce space. Steels similar to those used for like purposes in the automobile are coming into comparatively common use for shafts and spindles of machine tools and other machinery. Little use has yet been made of the new gear steels. In marine work, particularly in the vast amount of machinery which enters into the equipment of warships, there must be many places where greater strength and reliability or equal strength and reduced size are essential factors. The cost is greater as compared with the ordinary steels, but with those who value their reputations this consideration does not offset dependability.

Pig Iron Supply and Demand.

A question in which producers and consumers of pig iron have the liveliest interest just now is the relation that exists between production and consumption now that 200 coke and anthracite furnaces are in blast. The increase in output from a daily rate of 36,444 tons in June to 50,434 tons in October, or nearly 40 per cent., is a large one for a period of but four months. If consumption has been increasing with equal pace the rapidity with which additional furnaces have been coming into line is only cause for congratulation. The absence of complete data as to stocks, however—a lack which many in the trade consider unfortunate at this particular time—makes it more difficult to determine the status of the industry, though the drift may be known in a general way.

One fact that appears from an examination of the production statistics is that the merchant furnaces have increased their output since June much more rapidly than have the steel works furnaces. It can readily be seen that under all conditions the steel companies are in position to secure a much closer adjustment of their pig iron output to the requirements of their mills than merchant furnace companies can make to the requirements of their customers. Having many furnaces, the large steel company has a flexibility in operation that the isolated furnace plant does not have. It has occurred more than once in the past year that with three furnaces going a steel works group has made more iron in one month than four furnaces of the same group made in the month preceding, the stacks being held down or pushed according to the demand upon them. In the case of a single furnace, if it runs at all it must make at least its average product; when it blows out, it is with the expectation of remaining idle for a matter of weeks or months. We have had in the past two months the blowing in of a good many merchant furnaces, whose owners, after a period of idleness, have decided to get their share of going business. These decisions naturally are made without any exact knowledge of the existing balance between supply and demand and are sometimes dictated by considerations that have no direct relation to supply and demand. To emphasize just what has taken place in the two lines of pig iron production—steel works and merchant—we reprint the figures given in our statistics for October, showing the daily rate of output in the first 10 months of the year:

Daily Rate of Production.—Gross Tons.

	Steel works.	Merchant.	Total.
January	21,432	12,286	33,718
February	25,717	11,446	37,163
March	27,145	12,474	39,619
April	24,185	14,104	38,289
May	24,505	13,098	37,603
June	23,923	12,521	36,444
July	25,762	13,525	39,287
August	28,952	14,899	43,851
September	31,117	16,183	47,300
October	32,144	18,290	50,434

Measuring from June, from which month there has been a steady increase in both columns, the October figures show a gain of 46 per cent. for merchant furnaces and 34 per cent. for steel works furnaces. The question on which the merchant interests would gladly have light is whether consumption has grown at a rate that will absorb the increased output and the further increase that is promised in the immediate future. For, while the merchant interests produced at the rate of 18,290 tons in October, it is probable that 20,000 tons a day will be exceeded in November.

Heavy buying came in the last 10 days of October, and is still in progress. But a number of large merchant pig iron firms had greater stocks at the end of the month than at the beginning. In other cases, notably in Virginia, stocks declined in October, while with many furnaces the month showed little change. An outstanding fact about the buying of the past four weeks is that many consumers saw that cost had been closely approached if not reached by the prices realized in much of the October business. They were willing, therefore, to buy, even though business was not on their books equal to their purchases. Therefore, while the tonnage taken in this movement seems large, it is to be remembered that for much of it deliveries stretch over a good many months. Doubtless the improvement that has followed the election, difficult as it has been to measure it in the general hurrah of exaggeration and misstatement, has made melters of iron more willing to carry a stock than they have been in months. Thus consumers are likely to share with producers, in the next few months, the accumulations which for a long time have been largely carried by the latter. But a marked expansion in foundry activity is not to be looked for at this season. It will take new enterprises and important extensions of plant, with their requirements of power equipment and machinery of all descriptions, to give a decided impetus to foundry operations. It is a question whether demand of this character has not now been anticipated in part by the blowing in of furnaces.

Employers' Interest in Apprentices.

While the claims of this or that method of training young men in the metal working trades are being urged, and comparisons are being made between manual training schools, trade schools and industrial courses in public and special schools, one thing stands out in the new apprenticeship movement. It is the interest everywhere being taken in the question by employers. Whatever might have been said a few years ago of the indifference of proprietors to the bringing up of a new supply of mechanics, there are evidences now of a very lively concern. We read, for example, of a series of evening meetings at which in turn manufacturers of machinery in a New England city are to discuss with the boys who are now taking combination shop and high school training in that city practical questions connected with shop operations. In the two important organizations of employers in metal working lines the training of a new supply of workmen is a leading topic at every annual convention, and time has been devoted unsparingly by members to whom this subject has particularly appealed to the working out of the apprenticeship plans originating with these associations. It goes without saying that if the same amount of attention had been given to apprentices 20 years ago, or 10 years ago, the situation would be far better to-day. But that is not to the point, which is that if the intelligent work now being put on the problem by employers is kept up, the next 10 years will tell a very different story from what has been heard of late as to the supply and quality of workmen in machine shop and foundry.

Workmen's Compensation for Injuries Proves Harmful.

Evidence multiplies to show that laws which hold the employer financially liable for accidents to workmen regardless of where the negligence may lie are working out neither with justice to the employer nor to the moral uplifting of the average employee. In *The Iron Age* for September 3 reference was made to the evils that have developed under the French system of insurance of employees against accident, in which the employer is compelled to pay all premiums and where negligence does not exist as a factor. Under this system it has been found that the progression in the number of accidents is intensified by the constant increase in the average duration of temporary unfitness for work, and consequently in the average compensation due to workmen while they are nonproducers. A similar condition is noted under the British Workmen's Compensation act, especially since the passage of the law of 1906, in which was included a clause, not in the act of 1897, whereby an employer is made liable for an accident caused by serious or willful misconduct, if the result is the death or permanent disablement of a workman. Apart from deliberate attempts to take advantage of this clause, statistics prove that the placing of all responsibility on the employer has had the effect of increasing carelessness on the part of the employee. Care against his own negligence in its relation to himself and his fellow workmen is no longer operative in the same degree that exists under the Employers' Liability acts of the United States and other countries which have not assumed so radical an attitude of paternalism toward the so-called working classes.

Sir John Gray Hall, an eminent English lawyer, in a paper read before the Incorporated Law Society, of which he is a former president, told his experience as a solicitor, with special attention to the newer clause of the act whereby an employer is liable for an accident caused by willful misconduct as already referred to. He argued that this clause is hard on the employer and is a source of temptation to relatives of workmen. He cited the case of a ship's steward, who, contrary to orders, went aboard ship by means of the cargo skid to prevent officers seeing that he was intoxicated, and as a consequence fell down a hatchway and was killed. Continuing, he said: "It does not require a strong imagination to conceive of cases where such a state as this may lead to what may be equivalent to murder. Relations, legitimate or illegitimate, who would be benefited by the sum payable on death or by the allowance for a permanent injury, and who have no love for the man in question, might readily ply him with drink when he is about to proceed to work involving danger to any one the worse for liquor." A Sheffield practitioner, dwelling on the effect upon the morale of the workingman, says: "It is sad to find by painful experience to what an extent unfair advantage is taken of this act by some of those for whose benefit the laws were framed. Instead of honorably trying to get back to work as soon as possible, thus proving their manly independence and retaining their self-respect, the injured workmen, in too many instances, try to persuade themselves and their medical examiners that they are incapacitated for work long after their condition justifies such a contention. The

hope of obtaining a lump sum as compensation (which the law provides for a stated length of disability) no doubt acts in some cases as a strong motive to profess that no improvement is taking place in their condition." The evil of the lump sum payment in many of these cases, the money being quickly squandered, usually for dissipation, is pointed out, and it is suggested as a remedy that the court be given the power to employ a medical assessor whose finding shall be final, and to convert the lump sum into installment payments.

There is a trend of thought in America favoring some law similar to these British and French statutes. In theory, as viewed by those philanthropic persons who advocate them, these laws are wise, in that employers and indirectly the public as a whole stand between the workmen and their families and a poverty which may become pauperism. But it is a grave question whether in practice the system operates to the benefit either of the public or of those whom it is intended to aid. It is not a far cry from the paternalism of the community which provides food and shelter and medical care for the indigent under existing systems and that which compels the employer to pay his working people wages which they do not earn and cannot earn because they were injured through their own negligence. The Employers' Liability acts make the employer financially liable to a workman where the latter is injured through the former's negligence. This law is abused, partly because the sympathy of the average jury is with the injured man seeking to recover from the wealthier individual or corporation who employed him, and partly because of the trickery, even knavery, which exists in certain elements of the legal and medical professions. Under the Employers' Liability act it costs the employer more per individual case decided against him, but the awards of damages are much less frequent than under a system where every accident must be paid for. The system might as well extend to sickness; the principle is the same as in accident cases where the employer is not liable.

Sir John Gray Hall's allusion to the opportunity of relatives of workmen to plot for their injury suggests the danger which accident insurance companies have found of some importance in their dealings with policyholders—that of intentional accident. It is easy to imagine a man desperate or stoical enough to submit voluntarily to an accident. Laziness might be the motive, or in the fear of dismissal the opportunity might be seized to put the employer under liability to support a workman until the healing of an injury. There is a semicriminal class of people in this country, intermixed in the cosmopolitan population, which might prove an expensive burden under a system of workmen's compensation or the French system of insurance, which is similar in its principle.

There is something non-American in the workings of these laws. The independence of the workman is destroyed to an extent; he has the knowledge that he will be looked after during periods of idleness resulting from his own negligence. If he is injured he receives money for which he gives no return, and to which he could never be entitled were it not for the fact that the law says it must be paid him on the general theory that he must not become a charge to his community. There are plenty of American workmen who would decline to receive money under such conditions, or who, if they were compelled by circumstances to accept it, would consider it as a loan. This is the one extreme class. The other, and perhaps it is the larger, justifies every means by which the employer may be made to pay it money. With such legislation proposed in Congress and by some of the States, it would be well first to examine thoroughly the workings of similar laws abroad.

CORRESPONDENCE.

Foundry Accounting Methods.

To the Editor: We note in your current issue an article on "Foundry Accounting Methods," being the reproduction of a paper read by John Doughton before the Philadelphia Foundrymen's Association. We feel that inasmuch as the system described in this paper was developed in the plant of this company, and that only a meager and garbled description of it is given, an erroneous impression may be obtained of its adaptability to the general foundry business. The system, however, in detail, has been used by us for the last two years, to the great benefit of our customers, and it has insured prompt deliveries as specified in our promises upon receipt of orders. Any parties interested in this matter can obtain such information as they may desire by communicating with this company.

CHESTER STEEL CASTINGS COMPANY.

CHESTER, PA., November 13, 1908.

The Structure of Titanium-Treated Steel.

To the Editor: In your issue of November 5 describing specimens of steel made by the Lash process in the electric furnace and shown at the New York meeting of the American Electrochemical Society, you remark on the "laminations" which appear in a fracture of a sample made from ingots treated with titanium. The curious fibrous structure of steel treated with titanium, even when the steel is far from wrought iron, is very characteristic, and perhaps has some relation to the extraordinary toughness that is combined with a high tensile strength in metal treated in this manner. It is, however, questionable whether the appearance really represents what are usually known as "laminations." My opinion on the subject would be useless because of my rudimentary knowledge of steel; but it may be of interest to note that certain experts deny flatly that this titanium treated steel shows what are known as "laminations." Incidentally, it may be noted that the sample of steel does not contain even a trace of titanium, but was simply "treated" with about 0.1 per cent. of titanium in the ladle. FRANCIS A. J. FITZGERALD.

NIAGARA FALLS, N. Y., November 12, 1908.

The first all-big gun battleship for the United States Navy, the North Dakota, was launched at the works of the Fore River Shipbuilding Company, Quincy, Mass., November 10. This vessel will have a displacement of 20,000 tons, or 2000 tons more than that of the original British Dreadnought. Curtis' turbines of 25,000 hp. will be installed, calculated to drive the ship at a speed of 21 knots. The equipment will include 2 12-in. guns, 14 5-in. rapid fire guns, 4 three-pounders, 4 1-lb. automatic guns, 2 3-in. field pieces, 2 50-caliber machine guns and 2 21-in. submerged torpedo tubes. The armor will be 8 in. thick around the hull. The vessel is now about 60 per cent. completed, and has so far been built in record time, only 282 working days since the laying of the keel on December 16, 1907. The Delaware, now being built at Newport News, Va., will be similar to the North Dakota except the engines.

The Government of Saxony has issued a decree under which the right to search for and to extract minerals containing radium is retained by the State, which may, however, concede these rights to other persons. Reference is made in the decree to a number of springs rich in radium, notably to the waters of Georgenthal, in Vogtland, which yield 58.8 units of radium, as compared with the 47.5 units of the Karlsbad waters, or upwards of one-third of the volume found in the richest springs hitherto discovered—those of St. Joachimsthal. It is not intended to deprive private owners of their rights, but rather to regulate the production of radium, so that the best means of utilization in the national interest may be carried out.

The American Steel Foundries.

The business of the American Steel Foundries has suffered severely from the cessation of buying by railroad companies. The report for its sixth fiscal year, and the third of the present management, covering operations for the 12 months ending July 31, 1908, presents the following income account as compared with the previous fiscal year:

	1908.	1907.
Earnings from operation of plants and net income of subsidiary companies after deducting manufacturing, selling, administrative and head and district office expenses	$621,055.94	$2,893,641.97
Other income:		
Interest, discount and exchange $40,297.47		$37,192.08
Income from investments and loans 52,101.70		26,890.99
Sinking fund income and profits 49,688.86		.....
Miscellaneous 5,670.31		8,783.22
	147,758.34	$72,866.29
Profit on sale of Commonwealth Steel Company stock		134,098.44
Total income	$768,814.28	$3,100,606.70
Deduct:		
Interest on borrowed money		$39,635.81
Interest on bonds $232,300.00		233,192.33
Interest on debentures 68,736.00		.....
Bond sinking fund installment and accretions 154,688.86		105,000.00
Depreciation of buildings, plant and equipment (all properties) 207,910.64		233,681.58
Special patent and other expenses (written off) 46,733.20		110,000.00
	710,368.70	$721,509.72
Balance—net income	$58,445.58	$2,379,096.98

The general balance sheet as of July 31, 1908, is as follows:

Assets.

Real estate, buildings, equipment, patents and goodwill, as per balance sheet of July 31, 1907		$34,693,795.15
Less net surplus arising from readjustment of capital, in accordance with stock reduction plan of January 3, 1908		14,925,575.53
		$19,768,219.62
Add net expenditures on additions and improvements during the year		144,031.41
		$19,912,251.03
Real estate not used for business purposes		298,630.15
		$20,210,881.18
Sinking fund assets (exclusive of bonds purchased and held by trustees):		
Cash and accrued interest		14,875.18
Securities:		
Company bonds at cost (in anticipation of sinking fund requirements)	$223,372.36	
Commonwealth Steel Company—Notes secured by first mortgage	330,000.00	
Miscellaneous securities	118,326.00	
	$671,698.36	
Inventories	2,176,049.68	
Accounts and bills receivable (less reserves)	730,139.79	
Collateral time loans	1,500,000.00	
Cash	479,311.74	
		5,557,199.57
Insurance premiums, &c., prepaid		47,682.46
Total		$25,830,638.39.

Liabilities.

Capital stock (authorized and issued)	$17,184,000.00
Bonds and debentures:	
First mortgage 6 per cent. 10-30 year bonds	$3,500,000.00
Less redeemed and held by trustees of sinking fund	687,000.00
	$2,813,000.00
First mortgage 5 per cent. bonds of American Steel Casting Company (due November 1, 1912)	446,000.00
Four per cent. debentures	3,436,800.00
Accounts payable	570,391.20
Payroll accrued	48,895.11
Accrued interest on bonds and debentures	144,311.00
Depreciation and renewal reserves	974,106.64
Bond sinking fund (accrued since August 1, 1907)	154,688.86
Net income for the year ending July 31, 1908	58,445.58
Total	$25,830,638.39

From President Wm. V. Kelley's accompanying statement to the stockholders the following extracts are taken:

The gross sales for the year were $8,964,168.76, as compared with $19,463,521.05 for the preceding year; $15,297,495.89 for the year ended July, 1906, and $9,053,608.85 for the year ended July, 1905.

In considering net earnings ($58,445.58) it should be borne in mind that, while such net earnings are the only amount applicable to surplus or dividends, they do not fully represent the actual earning power of the ocmpany as at present constituted, even under such adverse conditions as prevailed during the year, because these figures are the remainder after full provision for interest on bonds and debentures, bond sinking fund, depreciation of properties, &c., amounting to more than $700,000, more than half of which is of direct benefit to the stockholders through the reduction in outstanding bonds and the preservation of buildings and equipment. It may, perhaps, be proper to add that, for the year ended July, 1905, with an almost identical volume of business, the result, without providing for any of the above items, was a loss of several hundred thousand dollars.

The great and sudden decline in business, due entirely to the panic or the causes which led to it, made it impossible to operate the company's plants to more than 15 to 20 per cent. of their capacity for many months. Expenses were reduced wherever possible without destroying the company's organization, but, as shown by the experience of railroads and other corporations, it is impossible by a reduction in expenses to offset such an enormous loss in the volume of business; therefore, however disappointing the showing may be, it is believed stockholders will appreciate that every effort has been made, and that the organization has been maintained at such a point that the company can immediately profit from any resumption of business by being in position to handle it promptly, properly and economically.

In addition to provision for depreciation, proper charges have been made for repairs, renewals and maintenance (including patterns and relining of furnaces), amounting to $576,984.76, and absorbed in manufacturing costs.

During the year $144,031.41 was charged to capital account, on a conservative basis, for additions, new construction, machinery and equipment. In addition, $108,342.73 of the amount heretofore reserved for depreciation was applied to minor additions and improvements.

Aside from the ordinary transactions the principal items of interest are as follows:

Under date of January 3, 1908, a plan for a change in the character and amount of the company's capital stock was submitted to the stockholders and a special meeting called for its consideration. The plan was approved by the stockholders at an adjourned special meeting held June 12, 1908. All of the new stock has been issued and most of the old stock has been exchanged for the new stock, securities and cash to which it is entitled.

The plan adopted provided for the surrender, retirement and cancellation of all the then outstanding stock of the company, both preferred and common, and the issuance in place and lieu thereof of $17,184,000 new stock of one kind and class, without distinction or preference between any of the holders thereof; also the issuance of $3,436,800 of 4 per cent. 15-year debentures, and at the payment of $515,520 cash, distributable as follows:

To the preferred stock, 77 per cent. in new stock, 20 per cent. in debentures and 3 per cent. in cash.

To the common stock, 25 per cent. in new stock.

The plan also provided that any surplus arising from the retirement and cancellation of stock and the accumulated surplus up to August 1, 1907, should be applied (1) against the cash to the preferred stockholders; (2) to provide for the debentures; (3) to reduce the cost of properties account.

After absorbing necessary expenses in connection with the plan, and applying the surplus as provided, the net result is the present capital stock ($17,184,000), an amount which may fairly be considered as representing the value of the company's assets in excess of its bonded indebtedness, and on which under normal business conditions dividends should be earned and paid; a reduction in the property account of substantially $15,000,000 and a permanent working capital sufficient for ordinary conditions; furthermore, owing to the change in the amount of authorized and issued stock, the company is enabled to comply with the requirements of certain States in which it has heretofore had no legal standing.

The reduction in the capital stock of the American Steel Bolster Company, of which this company is the beneficial owner, authorized before the last annual report and balance sheet, has been consummated.

The experience of previous years having shown that

the time between the close of our fiscal year and the date of the stockholders' annual meeting, as previously fixed, was too short for the proper preparation of accounts, reports, &c., the by-laws have been changed, making the annual meeting date, beginning 1908, the first Thursday next preceding the first Friday in December.

Regarding the business outlook, it may be said that, while the volume of business is still small and far from satisfactory, there has been a distinct improvement since August 1. Now that the Presidential election is settled it is believed that progress toward normal conditions will continue more rapidly. Orders not received during any particular year is not business lost, but simply delayed.

Canada's Steel Rail Duty.

TORONTO, November 14, 1908.—During the Canadian election campaign the attention of the public was so occupied with other issues that the old dividing question of trade policy was scarcely considered. Now that the polling is over, the conflict of opinion on that question recommences. One of the new impulses to it is the sale of 9000 tons of Canadian rails to purchasers in India. This is made the occasion for a fresh attack by the anti-protectionist press on the Dominion Government's arrangement for fostering the iron and steel industry. The *Weekly Sun* takes the lead in this attack, as it formerly took the lead in the agitation against the bounties. It understands that the selling price of the exported rails was much below what the Dominion Iron & Steel Company charged for rails it supplied to Canadian roads. It is contended that if the company can capture business in the world's open market in the face of British and other competing railmakers, it can hold its own in the home market without any assistance from the tariff or the bounty law. Hence it is held that the duty at least should be abolished. It is granted that to cut off the bounties before the end of the four year period for which they are established might be considered a breach of faith, and therefore the *Sun* is now writing that these should be suffered until 1912, when, however, it would have them swept away. But it wants the $7 rail duty ended now. Parliament is advised to repeal the rail duty and ease the cost of railroad building.

The railroad companies, who now feel the cost of construction and operation much more keenly than they did for years prior to the last twelve-month, would raise both hands for the change. The Toronto *Star*, a strong supporter of the Laurier government, likewise calls for the abandonment of the duty. In the rural and Western press the demand for that change is also making itself heard. It is somewhat noteworthy that newspapers that have been conspicuous for their advocacy of protection are not coming forward to the defence of the rail duty as might be expected. Of newspapers of prominence, the Montreal *Gazette* is almost, if not quite, its sole champion. That journal says it would be inequitable to penalize the Sault company, which exported no rails, in order to punish the Sydney company, which was the only offender, if offence it was to export rails at the outside market price. It asks if it be not better that the company sell rails abroad at the price that negatives a profit than that it close down the works and put a stop to wage earning as well as precluded profits.

Unquestionably, the company would prefer to sell all its output in the well protected home market to shipping any part of it to an open market where the whole stress of foreign competition is to be withstood. In the matter of transportation, however, the difference in cost is not in all cases heavily in favor of the home market. To lay down on the Pacific Coast of Canada rails manufactured on the Atlantic Coast cannot be greatly cheaper than to deliver them at Calcutta, Madras or Bombay. Sydney rails have been sent round Cape Horn to British Columbia. It is reported that two steamships of the New York & South American Line will leave New York next month with 5000 tons of tin plate, steel rails and structural steel for Vancouver. If rails can be shipped from New York over that long route and entered into Canada against a duty of $7 a ton, the selling of Sydney rails in free trade India should not seem strangely at variance with regular business. It is a certainty that there would have been no Canadian rails available for India had there been no money stringency to interfere with the plans of railroad building in this country. The stringency affected the government itself, whose surplus was temporarily absorbed on capital account at a time when not advantageous for the floating of new bond issues. Revenue fell away sharply. During the seven months ending with October, the revenue was $10,000,000 less than in the corresponding period of 1907. The railroad companies were affected by the same causes. There ought to have been, and ordinarily would have been, a sufficient demand to keep both the Sault plant and the Sydney plant busy on Canadian account. But as it turned out, the Sault mill had to be shut down for want of home orders, and some of the Sydney mill's output had to be sold abroad. It is expected that the home demand will again become strong enough to take up the output of both mills operated at full capacity. As in the United States, so in Canada, the sparing expenditure of the railroads for some time has only had the effect of putting off their needs.

Exports of Sydney Rails.

TORONTO, November 16.—The selling of 8000 tons of Sydney rails for shipment to the Punjab appears not to be an exceptional transaction, but the beginning of an active export trade on the part of the Dominion Iron & Steel Company. An order for 16,000 tons for delivery early next year in New South Wales, Australia, is now reported to have been received by the company since the India business was booked. Following that again comes news of an order the company has received from Mexico. It is stated also that the company has export orders for billets and rods. While billets are among the articles whose exportation involves the forfeiture or return of the bounty on the raw material, rails are exportable without conditions affecting the bounty on the constituent pig iron and steel ingots. If the company should succeed in working up a very large external business the bounty money this business would cost the people of Canada in the period the bounties have yet to run would swell proportionately. Naturally, the growth of the company's trade abroad would on that account not cause general enthusiasm. On the contrary, it would rouse a popular feeling against which the government would scarcely dare to renew the bounties at the end of the current five-year period. This must be apparent to the company, whose foreign operations may therefore be undertaken upon the assumption that the bounties are not to be renewed in any case. Very possibly the company has been made to understand that bounties on the product of imported ore shall absolutely terminate when their present period comes to an end. In that case the company would be but sharing worldly wisdom in securing all the foreign business it can while it has the benefit of the bounties.

In defense of the company's foreign dumping, it is pointed out that 3000 hands are thereby kept at work, and that mercantile business is to that extent sustained. Would it be better, asks the Halifax *Chronicle*—a government supporter—that the works should be closed, the hands reduced to idleness and want, and the local trade stopped? That would be undesirable, but such consequences have had to be suffered in localities of which other industries were the life. Scores of woolen mills have been put out of business by the influx of imported woolen fabrics, under the British preference. Yet the government did nothing by bounty payment or otherwise to save the work for the home artisan. The question is asked, Is it for relief purposes and as a provision against the spread of unemployment that the bounties are paid? If the company and the government together are making sacrifices for that purpose then the sacrifice should be as far as possible for the general easing of Canadian depression, and not largely for the benefit of India, Australia and Mexico. Possibly if the company would offer rails to Canadian companies at its export price, it would be able to sell at home all it can make. In that case work would be found not only for the company's hands but also for the men who labor on railroads.

C. A. C. J.

Iron and Steel Bounties in the Dominion Election.

In the campaign that preceded the Dominion general election there appears to have been something like an agreement between the leaders of the two political parties that neither side should assail the bounties to the iron and steel industries. As a matter of fact, it was not possible for the Conservatives to make any attack on the bounty system which the Liberal governments have developed so extensively since 1897; for it was a Conservative government that established the system in 1883. It was only the independent or the labor candidates who assailed the bounties. In Sydney, however, the Liberals circulated a statement that Mr. Borden, the leader of the Conservatives, would, if he were called upon to form a government, make an end to the bounty system. A repudiation of this statement was promptly made by Mr. Borden. "There is," he telegraphed from Halifax to the Sydney *Post*, "absolutely no intention to disturb existing conditions."

The success of the Liberals at the polls on October 26 makes it pretty certain that a Liberal Government will be in power in 1909, when the bounty legislation will again come before Parliament; and the likelihood is that the system will then be continued for another four or five years. There is not more than a canoe crew of independents in the new House of Commons. They, and the two labor men who have been returned, will scarcely count against the solid group which will support the government, and the equally solid group that will sit on the Opposition benches and follow the lead of Mr. Borden.

One of the significant incidents of the election is the heavy losses which the Laurier Government has sustained in the Province of Nova Scotia. Between 1883 and 1908 of the $11,000,000 paid out in bounties quite two-thirds had gone to companies owning furnaces at Acadia Mines, Ferrona, Sydney and Sydney Mines, all in the Province of Nova Scotia. Yet in spite of all this largesse to the industry in Nova Scotia, and of the fact that except for less than $250,000 it had all been bestowed by the Liberal Government, the Liberals lost six of the 18 seats in the Province. They have five fewer supporters from that Province in the new House of Commons than they had in the Parliament of 1904-'08; and even the member for the electoral district in which the Sydney rail mill is located is among the defeated Liberals.

For the American iron and steel trade the election has one important significance. Mr. Borden and the Conservatives failed of success chiefly because they were committed to the abolition of the British preference and to a tariff which would have been practically prohibitive against imports from the United States. The Conservatives have assailed the British preference ever since it was established in 1897. They continued this policy in spite of the fact that farmers in five of the provinces made it clear to the Tariff Commisssioners in 1905 that they were in favor of the preference, and uncompromisingly hostile to any higher duties than those in the tariff of 1897 on imports from the United States. In spite of these manifestations of the farmers in the three prairie provinces, in Ontario, and in Prince Edward Island, the Conservatives, after the tariff revision of 1906, persisted in their hostility to the British preference; while as regards the tariff against the United States, they took up the cry of the stove manufacturer of Hamilton, who, at the convention of the Canadian Manufacturers' Association at Toronto, in September, 1907, vehemently declared that he was in favor of a tariff as high as Haman's gallows if a tariff so high were necessary to keep American manufactures out of Canada.

It was the Haman's gallows attitude of the Conservatives, and their astonishing inability to see that the British preference was universally popular in Canada, that settled their fate at the general election. They made no gains in rural Canada. The few gains that accrued to them were in cities such as Halifax, Montreal, Hamilton and Winnipeg. Rural Canada put out of sight the well-founded charges of graft and corruption and wasteage of the public domain made by the Conservatives against the Laurier government when the farming population realized that a vote against the Laurier government was a vote against the preference and in favor of a prohibition of manufactured imports from the United States. The Laurier government is now quite conscious that it was this attitude of rural Canada toward the extreme tariff policy of the Conservatives that saved it. The election has brought home once more to the Government the lesson of the public sessions of the Tariff Commission that preceded the revision of the tariff in 1906. This is that rural Canada, which elects the overwhelming majority of the members of the House of Commons, will not stand for any further increase in the tariff on imports from either England or the United States. The lesson has now been so well brought home to the Government that manufacturers in the United States who do any large business with Canada need have no apprehension that their business will again be dislocated by higher duties. Some new taxes will soon have to be levied to meet the large deficit in revenue that now confronts the Dominion Government. There is, however, no likelihood that higher tariff duties will be resorted to to meet the deficiency due to the heavy falling off in Treasury receipts for the last 9 or 10 months. E. P.

The German Pig Iron Market Weaker.

Berlin cablegrams of the past week refer to the "final failure" of the attempts to extend the four German pig iron syndicates and to organize them into a general syndicate; but so far as two at least of the syndicates are concerned, formal decisions to dissolve on December 31 had previously been announced. As a result of the action of the Rhenish Westphalian syndicate steel making pig iron, which had dropped to $15.50 in the latter part of October, is now at $14.50. The Luxemburg-Lorraine syndicate's scheduled dissolution has brought Luxemburg iron down to a basis of about $12.50 for No. 3 foundry. Of the Siegerland pig iron producers nine have formed a joint sales agency for handling their iron after January 1, and other furnaces may participate in the movement. Stocks of iron have been increasing at furnaces, even though further additions have been made to the list of idle furnaces. Buyers are not attracted by prices quoted for delivery after January 1, believing further reductions may come, though independent furnace interests are now believed to be close to their cost line. The exports of pig iron increased in September as did also the exports of semi-finished steel, though in the past few weeks the export movement has slackened somewhat.

A transfer of properties for purposes of operation has been made between the Carnegie Steel Company and the American Steel & Wire Company, though there is no change in ownership. The American Steel & Wire Company, which has operated the rod and wire mills of the Union Steel Company plant at Donora, now takes over the two blast furnaces, open hearth plant and blooming and billet mills there, heretofore operated by the Carnegie Steel Company. The latter company, in return, takes over for operation the Edith and Neville Island furnaces of the American Steel & Wire Company.

The Follansbee Brothers Company, Pittsburgh, mill at Follansbee, W. Va., manufacturer of sheets and tin plate, has opened an office at 326 Reaper Block, Chicago, which is an addition to its office and warehouse at Milwaukee, Wis., where a large stock of roofing and black plates, solder, &c., are carried. Both offices are in charge of Austin Klawson, whose residence is in Chicago.

The receivership of Milliken Bros., Inc., has been further extended this week to January 2, 1909. The reorganization plan, it is expected, will be worked out meantime, and it is believed by the receivers that it will in due time receive the approval of the court. The plan includes the building of a blast furnace.

PERSONAL.

J. D. Harris, formerly works manager of the Westinghouse Air Brake Company, Wilmerding, Pa., has been appointed superintendent of motive power of the Baltimore & Ohio Railroad, with headquarters at Baltimore, Md.

James Warren, formerly manager of the Jessop Steel Company at Washington, Pa., has resigned and was presented with a handsome testimonial by the employees. He will spend a brief vacation at his home in Providence, R. I., before assuming another engagement which he has already made.

William S. Douglass, for about 10 years general superintendent of the William Tod Company, Youngstown, Ohio, has resigned.

John J. Jamison, president of the Jamison Coal & Coke Company, Pittsburgh, was chosen State Senator at the recent election, representing Westmoreland County, Pennsylvania.

J. G. Butler, Jr., the well-known pig iron manufacturer of Youngstown, Ohio, and chairman of the Bessemer Furnace Association, is named as a candidate for United States Senator from Ohio, to succeed J. B. Foraker.

Among last week's arrivals from Europe was F. W. A. Joly of Wittenberg, Halle, Germany, president of the Association of German Manufacturers of Fire Brick (Wirtschaftliche Vereinigung deutscher Chamotte Fabrikanten), which he organized, with the object of improveing methods of manufacture. The association has established standards of quality and shape, reducing the number of the latter, and has studied the requirements of customers with reference to tensile strength, refractory qualities and uniformity of product. Mr. Joly is about to spend some weeks in the country to study American conditions, with a view to drawing therefrom applications for the industry in his own country. He is in a position to offer to American manufacturers suggestions growing out of the experience of German makers which may prove of value. He is making the Hotel Astor, New York, his headquarters.

Dr. Ernst Menne of the Coeln-Muesener Bergwerks A. V. of Creuzthal, I. W. Germany, is now in this country, his address being care of Heidelbach, Ickelheimer & Co., bankers, New York. Dr. Menne is the inventor of the oxyhydrogen process for opening the tuyeres and tapping holes of blast furnaces, the apparatus being in use at 108 plants in Europe. A demonstration is being made at Pottstown, Pa., and will probably be conducted at other points.

Walter B. Snow, publicity engineer of Boston, has been appointed by Governor Guild a member of the Massachusetts Commission for the Blind.

M. Yoshino, general superintendent of motive power of the South Manchuria Railway, with headquarters at Dalney, Manchuria, spent November 11 in Dunkirk, N. Y., inspecting the Brooks plant of the American Locomotive Company. He is making a tour of this country in the interest of his railroad and will remain until about the close of the year.

Charles N. Turner, formerly chief of the tariff bureau of the Chicago, Milwaukee & St. Paul Railroad, Chicago, has been appointed traffic manager of the Milwaukee Coke & Gas Company, with headquarters at Milwaukee.

Dr. Richard C. Maclaurin, professor of mathematical physics at Columbia University, has been elected president of Massachusetts Institute of Technology, Boston, Mass.

G. W. Dickie, for 23 years manager of the Union Iron Works, San Francisco, and for about two years at the New York Shipbuilding Company's yard superintending the building of the steamships for the Pacific Coast Company, has opened an office as consulting engineer and naval architect, at 24 California street, San Francisco.

Arthur J. Frith, who has recently had a consulting engineering office at 39 Cortlandt street, New York, has accepted a position as associate professor of experimental engineering at Armour Institute of Technology, Chicago.

John E. Lord, recently connected with the Hooven, Owens, Rentschler Company, Chicago, has been engaged by the Pressed Steel Turbine Company of America, and expects to open headquarters in Cincinnati in the near future.

John Sturgess, who has recently been connected with the Sturgess Governor Engineering Company, Troy, N. Y., as general manager, has accepted a position in the same capacity with the Lombard & Replogle Engineering Company, Akron, Ohio.

Prof. C. C. Thomas has resigned as head of the department of marine engineering, Sibley College, Cornell University, to accept the chair of mechanical engineering at the University of Wisconsin, Madison, Wis.

OBITUARY.

WILLIAM EDDY RIPLEY, one of the oldest and most esteemed employees of the Brown & Sharpe Mfg. Company, Providence, R. I., died November 10, after a short illness, aged 65 years. For almost all his active business life he was connected with the Browne & Sharpe Company, entering its employ in 1864. From that date until 1902 he was head timekeeper, in charge of the cost keeping department, a position which he filled with ability and faithfulness. Among a group of men who, while holding no official position, have been strong factors in the growth of the business, Mr. Ripley was most prominent and his services were considered valuable. Of late years he has occupied the position of confidential secretary to the treasurer of the company. When the Brown & Sharpe Quarter Century Club was organized he was elected secretary and he never failed of a re-election. He took an active interest in church work and was identified with a number of prominent secret societies. He leaves a widow, one son and one daughter.

JAMES FERGUSON, superintendent of the Safety Insulated Wire & Cable Company, Bayonne, N. J., died November 15, aged 48 years. He was born in Nova Scotia and was an expert on electrical matters.

OLIVER WELDON BARNES, a civil engineer, who had been identified with railroad construction work in various parts of this country for the last 60 years, died of pneumonia November 14 at his home in New York City, aged 88 years. Despite his advanced age he had been actively engaged in his profession up to a few days before his death. He was connected with the Pennsylvania Railroad, and it was he who settled the final location of the Pennsylvania Railroad from the Allegheny Mountains to Pittsburgh. He was a member of the American Society of Civil Engineers, the Union League Club, the New England Society and the Engineers Club of Philadelphia. He was born at Hartford, Conn. He leaves a widow, two daughters and a son.

JOHN W. THOMAS, superintendent of the Chicago Heights plant of the Inland Steel Company, died at his home in Chicago Heights, Ill., November 11. He was born at Niles, Ohio, June 14, 1856, and at an early age began working in the rolling mills of that district. His first connection after going West was with the old Chicago Steel Works, which he left in 1893 to accept the position which he held at the time of his death. He enjoyed the distinction of being a pioneer in the work of rerolling steel rails, and was widely known among mill men, by whom he was held in high esteem, both on account of his rare ability and his engaging personality. He served two terms as mayor of Chicago Heights, was president of the Canedy-Otto Mfg. Company, and also president of the First National Bank of that city. He belonged to the Chicago Athletic Club and several fraternal orders. He leaves a wife and four children.

The Navy Department, November 12, awarded the contract for the building of the battleship Utah to the New York Shipbuilding Company, Camden, N. J., for $3,946,000. As designed, the displacement of the Utah will be about 21,825 tons. The Utah is a sister ship of the Florida, now being constructed at the New York navy yard.

The National Founders' Association.

The twelfth annual convention of the National Founders' Association began its sessions at the Hotel Astor, New York, Wednesday morning, November 18, with an attendance of about 150 members. Preceding the convention the Administrative Council of the association held a two days' session, at which the association's work in the past year was canvassed and preparations made for the presentation of various matters to the convention. There was also in session on Wednesday a conference of members of the Stove Founders' National Defense Association. On Tuesday meetings were also held by officers of the American Foundrymen's Association and the American Brass Founders' Association, to confer on the relations of these organizations and to prepare for their joint convention at Cincinnati in 1909.

President O. P. Briggs opened the meeting of the National Founders' Association and announced the appointment of the usual committees, as follows:

Finance.—Geo. E. Emmons, General Electric Company, Schenectady, N. Y.; O. P. Letchworth, Pratt & Letchworth Company, Buffalo; E. L. Dawes, Standard Sanitary Mfg. Company, New Brighton, Pa.

Press.—Henry A. Carpenter, General Fire Extinguisher Company, Providence, R. I., and the secretary, F. W. Hutchings.

Resolutions.—F. B. Farnsworth, McLagon Foundry Company, New Haven, Conn.; T. L. Richmond, Buffalo Scale Company, Buffalo, N. Y.

The morning session was given up to the reports of the president, Commissioner McClintock, the treasurer and Secretary Hutchings. President Briggs, who has been so important a figure in the association in the past five years, having been continuously in office in that time either as commissioner or president, indicated in his report that with this convention he retired from the leadership of the work—a decision received with very general regret.

The programme for the remainder of the meeting, which continues through Thursday afternoon, includes the discussion of a number of important subjects. A statement will be made of the work accomplished in the distribution of literature among employees, particularly the circulation of the *Review*, the publication of the association. A decision will be made as to the lines to be followed in this work in the future. There will also be a discussion of the legislative proposals urged upon Congress by labor unions. The work of the branch offices of the association will be considered and members who have availed themselves of these offices will speak on the value of this method of giving assistance to employers involved in labor troubles. The relations of the National Founders' Association and the National Metal Trades Association will be considered in connection with the report of the joint committee of the two associations. Interesting information was brought out at the convention of 1907 relative to the advance in foundry methods resulting from the strike in 1906. Further data in the same line will be presented this year and the question of wages in open shops will come up. The election of officers will take place on Thursday afternoon. At the annual banquet given on Wednesday evening addresses were given by Ex-President Elliott of Harvard University, and others.

The Acheson Oildag Company.—Edward G. Acheson, Niagara Falls, N. Y., who in March, 1901, invented carborundum, and at present is the president of the International Acheson Graphite Company, a corporation capitalized at $3,000,000, and manufacturing graphite from coal under a process discovered by Mr. Acheson, has just closed arrangements for the construction of a plant at Dunkirk, N. Y., for the manufacture of his latest invention, a new lubricant, which will be known as Oildag. The plant at first will be largely experimental, but in a short time is expected to be on a par with the other inventions brought out by Mr. Acheson. That Oildag is valued highly by the inventor can be judged by the fact that it is covered by 23 patents, covering the formula and the process of manufacture. The new enterprise will be known as the Acheson Oildag Company, and the present quarters will be at the corner of Second street and Central avenue, Dunkirk. Little has been given out so far regarding the new lubricant, but it is claimed to be more lasting than oil, having a higher efficiency, and being considerably cheaper.

The West Virginia Board of Trade Meeting.

The fourth annual meeting of the West Virginia Board of Trade took place at Clarksburg, November 10 and 11, and was well attended by business men from every section of the State. The president, ex-Governor A. B. Fleming of Fairmont, delivered an annual address, giving valuable statistics and information regarding every phase of the State's progress and resources. Resolutions were passed in favor of the bulk sales law and against parcel post. A bill framed by a special committee for the creation of forest reserves and the protection of forests was recommended to the careful consideration of the Legislature. The Governor was requested to appoint at once a Good Roads Commission of seven men, who shall review the recommendations of the State Highway Inspector, pass on the legal, financial and engineering questions involved and propose to the Legislature a bill involving the permanent improvement of all the roads of the State.

A recommendation from the proper committee for the creation of a State Bureau of Statistics was approved. Strong resolutions for river improvements were presented by Congressman Wm. P. Hubbard of the First District, chairman of the Board's Waterways Committee, and were unanimously adopted. Action was taken in favor of running a West Virginia trade excursion through the Eastern cities to meet commercial organizations there and advertise the State's resources and advantages. A special committee was appointed to work out the details and enlist public support. Plans to publish weekly, during the sessions of the Legislature, a legislative journal, giving the roster of bills and synopses of important measures, were approved, and action was also taken to push through the legislative programme outlined. The new president is ex-Governor Wm. A. MacCorkle of Charleston. Ex-Senator Henry G. Davis was re-elected vice-president-at-large, and R. B. Naylor and W. Alfred Wilson of Wheeling were re-elected secretary and treasurer, respectively. The Board now embraces 18 commercial organizations in the State, with 150 memberships in the way of firms, individuals and corporations.

The commercial clubs of the various cities of Indiana are holding a meeting in Richmond, Ind., on Wednesday and Thursday of this week, to perfect an organization to be known as the Federation of Indiana Commercial Clubs. The chief address is by Gifford Pinchot of Washington, D. C., on "Conserving Natural Resources." A leading subject for discussion will be "Inland Waterways." For the banquet on Wednesday evening, W. D. Foulke of Richmond, presiding, the programme covered the following toasts: "Indiana's Place in Commerce," John T. Beasley, Terre Haute; "Business Principles in Public Offices," Alfred F. Potts, Indianapolis; "The Interurban's Importance in Commerce," R. B. Hanna, Fort Wayne; "Business Interests and Legislation," C. M. Kimbrough, Muncie; "Publicity As An Aid to Commercial Indiana," by a member of the South Bend Commercial Club; "The New Federation," A. Murray Turner, Hammond, and "Our Business and Our Country," by Judge D. D. Woodmansee, Cincinnati.

The greatest mine disaster in Germany in many years occurred November 12 at the Radboe coal mine, near Hamm, Westphalia. There was a heavy explosion about 4 a.m., and almost immediately the mine took fire. The number of the dead is stated to be 399.

The Harbison-Walker Refractories Company.

The sixth annual statement of the Harbison-Walker Refractories Company, Pittsburgh, which covers the operations of the fiscal year ending September 30, 1908, presents the following income account:

Earnings, after deducting $218,438.53 expenditures for all ordinary repairs and maintenance, which covers depreciation of plants		$1,148,406.08
Less extraordinary expenditures, being repairs and improvements, increasing the capacity and efficiency of the works	$77,735.10	
Charged off for the depreciation of mining and tram outfits	38,504.09	
Charged off for depletion of clay, coal and ganister properties	16,799.17	
		133,038.36
Net profit for the year		$1,015,367.72
Deduct: Interest on bonds	$127,937.50	
Dividend on preferred stock (6 per cent.)	575,614.50	
		703,552.00
Net surplus for the year		$311,815.72
Surplus account as at October 1, 1907		2,858,146.23
As at September 30, 1908		$3,169,961.95

The balance sheet is as follows:

Assets.

Properties and franchises owned and operated by the constituent companies		$28,755,433.88
Betterments, completed		1,118,408.98
Betterments, uncompleted		76,299.31
Deferred charges to future operations (includes clay, coal and ganister outfits, advanced royalties, uncompleted extraordinary repairs, &c.)		310,907.34
Inventories at cost	$1,335,861.97	
Accounts receivable (accounts of constituent companies against each other omitted)	891,775.05	
Bills receivable	36,017.98	
Cash	703,821.58	
Investment of reserves	182,000.00	
Own bonds purchased by company and held in treasury	312,000.00	
Other securities	61,559.26	
		3,523,035.84
Total		$33,784,085.35

Liabilities.

Preferred stock	$9,600,000.00	
Common stock	18,000,000.00	
		$27,600,000.00
Bonds, total issue	$3,500,000.00	
Less purchased and canceled as per sinking fund requirements	1,060,000.00	
		2,440,000.00
Bond interest and tax (accrued but not yet due)	44,446.25	
Reserve to cover premium at redemption of bonds	13,019.64	
Clay, coal and ganister properties depletion fund	111,528.75	
Sundry reserves	236,162.85	
		405,157.49
Accounts payable (liabilities of constituent companies due each other omitted)	123,443.34	
Pay rolls	45,522.57	
		168,965.91
Surplus		3,169,961.95
Total		$33,784,085.35

President H. W. Croft's accompanying statement to the stockholders is in part as follows:

The present depression began with the panic of November, 1907; consequently, this statement covers 11 months of this unusual depression, during which time the company has been fortunate in operating its plants at 57 per cent. of their normal capacity.

In the fifth annual statement, attention was called to the new plants built since the organization of the company, and also to the large amount of money spent at the same time to bring all the old properly located plants up to a point of efficiency equal to the new ones. During the same period, $200,000 to $300,000 was spent in developing the clay, coal and ganister properties, which now exceed 75,000 acres. In regard to the $77,735.10 charged off during the past year for extraordinary repairs, most of this work was for repairs that had been begun but not completed before the period covered by this statement. Apart from this, the extraordinary expenses have been light. The maintenance of the works and mines has been at a minimum and should continue so for some time.

We trust the wisdom of pursuing the above policy for the past five years is fully demonstrated by this statement for the past year, as such a showing, under the unusual conditions, would have been impossible with anything but the best equipment.

It was found necessary to discontinue common dividends. This statement, however, shows that the sinking fund, interest on bonds, and preferred dividends have been more than earned and paid; that there is a good cash balance on hand, and enough bonds in the treasury to take care of the sinking fund requirements for the next two years.

The sales during the past year of the products manufactured by the company have been in the following percentages: Blast furnaces, stoves and piping, 26.1; building brick, 15.6; open hearth plants, Bessemer plants, crucible furnaces, cupolas, malleable iron and rolling mill furnaces, 36.1; coke ovens, boilers, cement plants, copper and lead furnaces, gas plants, glass furnaces, lime kilns, potteries, railroads and various other miscellaneous purposes 22.2.

To meet the growing demand for fire brick in the Southern market, ground will soon be broken for a new plant at Birmingham where all grades of fire clay and silica brick that can be made to advantage at this point, will be manufactured.

The Leather Belting Manufacturers' Association.

The Leather Belting Manufacturers' Association, at its twenty-first annual meeting, held Tuesday at the Hotel Astor, New York, decided that the price of leather belting should be advanced to meet the constantly increasing price of hides. It was stated at the session that the price of hides has been going up during the last two months, and although leather belting manufacturers as a rule maintained their schedule of prices, it has been something of a hardship to them, and it seemed to be the general opinion of those present that there should be an advance in prices. The association re-elected all of its officers and decided to enlarge its Executive Committee, which has heretofore consisted of seven members, to comprise 20, these to be selected from various sections of the country, so that the governing body of the organization might be in a position to keep in touch with trade conditions.

Steel Wheels and the Steel Corporation.—The announcement has been made in the daily press that the United States Steel Corporation had determined to build a plant for the manufacture of steel wheels in the Pittsburgh District, involving an expenditure of $3,000,000, and that improvements would be made at the Schoen steel wheel plant at McKees Rocks, Pa., calling for $1,500,000, while betterments would be made at Homestead involving $1,000,000. The report grew out of the fact that W. E. Corey, president of the United States Steel Corporation, last week visited the works of the Schoen Steel Wheel Company, which was recently acquired by the corporation, and was much impressed by the evident superiority of the new type of wheel over cast wheels. Mr. Corey also inspected the experimental plant which has been in operation for some time at Homestead to test the Slick method of making steel wheels. While no definite plans have been outlined, it will be the policy of the Steel Corporation to extend the facilities for the manufacture of the rolled wheel as fast as the demand warrants.

Spang, Chalfant & Co., Inc., Pittsburgh, have about completed the building of a 16-in. skelp mill and a new puddling department, containing 24 puddling furnaces, all of which are expected to be ready for operation about November 25. Contracts for other material enlargements to the plant, located at Etna, Pa., are shortly to be placed.

The National Railway Company of Mexico, the Government system, is reported to have given an order for 75,000 tons of 85-lb. steel rails to the Monterey Iron & Steel Company for delivery, beginning December 1.

NEWS OF THE WORKS.

Iron and Steel.

The plant of the Lake Superior Iron & Chemical Company, Ashland, Wis., which has been shut down since the middle of last May, reopens November 19. The company manufactures pig iron, wood alcohol and pyroligneous acid and has 120 charcoal kilns.

The Youngstown Iron & Steel Roofing Company, whose steel lath department, which is located four blocks from the main plant, was badly damaged by fire October 17, has placed a contract for the erection of several steel buildings and for other equipment, and the burned portion of the plant will be rebuilt on a larger scale than before. The fire did not in any way interfere with shipments from this department, the company filling all orders promptly.

The William B. Pollock Company, Youngstown, Ohio, is making record breaking time on the rebuilding of Tod Furnace of the Youngstown Steel Company. The iron work will be finished about December 1, and the new stack is expected to be ready for blast about January 1.

The plant of the Thomas Furnace Company, at Milwaukee, Wis., was started up November 13 after having been shut down since December, 1907. John M. Thomas, president of the company, says he has many orders on hand and that he anticipates a large increase of business. Extensive improvements and repairs have been made to the plant during the year that it has been shut down. A new furnace has been built and the stock house and machinery throughout have been improved.

Parties who were reported in the daily press to be organizing a company to manufacture steel tires for locomotive and car wheels and other railroad accessories, with a plant at Gary, Ind., deny the statements and declare that the rumor has no foundation.

Hannah Furnace of the Republic Iron & Steel Company, at Youngstown, was blown in last week, and its Atlantic Furnace, at New Castle, Pa., was started up on Monday. All six blast furnaces of the company in the Youngstown and New Castle districts are now in operation, but it is probable that No. 2, at Haselton, will be blown out in a short time for relining and repairs. This company is making all the pig iron it needs for its Bessemer steel plant at Youngstown, which is now running full time.

The Pope Tin Plate Company, Pittsburgh, operating a 12-mill tin plate plant at Steubenville, Ohio, started up its plant in full last week, which had been running only five mills for some time. The company reports a heavy inquiry for bright plate, which it handles exclusively, and has recently entered some large orders from canning interests for delivery prior to April 1 next year.

Steps are being taken by a committee of citizens of Clearfield, Pa., to raise sufficient funds to start the idle plant of the Clearfield Iron & Steel Company. A number of prominent men are interested.

Marshall Furnace, at Newport, Perry County, Pa., is being prepared to start early in December.

The fires have been lighted in No. 1 furnace, the oldest of the plant of the Pennsylvania Steel Company, at Steelton, Pa. The stack has been idle for almost a year. No. 3 furnace is in operation at Steelton.

Owing to the resumption of work at a number of the Central Pennsylvania furnaces, the ore banks in the vicinity of Dillsburg, York County, Pa., are being worked again. These banks have been used for over a century.

The Standard Steel Company has increased the time at some of the departments of its mills at Burnham, Mifflin County, Pa. The Logan Iron & Steel Company has started its 12-in. mill at the same place.

General Machinery.

On November 12 the original plant of the Silver Mfg. Company, Salem, Ohio, built in 1890, consisting of a three-story building, paint and wood shops, engine, boiler and blacksmith departments, was destroyed by fire. The new office building, foundry, including practically all patterns, complete machine shop fully equipped with power, in which was the majority of iron working tools, and a four-story warehouse with an assortment of finished stock, were not damaged. As soon as the insurance is adjusted the company will rebuild the destroyed structures. Orders in some lines can be filled promptly, but in others there will necessarily be some delay.

The Jenney Electric Company, Anderson, Ind., manufacturer of electrical machinery, which is moving its plant from Indianapolis, has increased its capital stock from $450,000 to $600,000.

The Hammond Iron Works, Warren, Pa., is to enlarge its plant to meet the increased demand for its product. Contracts have been let for the erection of two new buildings, one 43 x 190 ft., and the other 56 x 122 ft. The company, which now employs 100 men, makes a specialty of steel tanks, and when the new shops are completed will have one of the largest plants of its kind in the country.

The Chicago, Milwaukee & St. Paul Railroad has placed an order with the American Locomotive Company, Brooks plant, for 38 locomotives. An evidence of returning prosperity is the schedule of 44 engines for next month's delivery at the Brooks plant, which is nearly double that turned out during any month of the present year.

The Gloversville Garage Company, Gloversville, N. Y., has been incorporated by W. Donald Hyde, Morrel Vroman and John W. Sisson for the purpose of erecting an automobile garage. Construction will be started within the next 60 days on a building 50 x 100 ft. A modern machine and repair shop will be maintained in connection with the garage.

The roundhouse and machine shops of the Southern Pacific Railroad at Beaumont, Texas, which were recently destroyed by fire, are being rebuilt on the same grounds and from the same plans.

Quite a large installation of Northern electric traveling cranes has recently been completed in the plant of the Penn American Plate Glass Company, Alexandria, Ind. There are five three-motor cranes in all, four being of 65 ft. span and one of 30 ft. span. All the cranes were made and installed by the Northern Engineering Works, Detroit, Mich.

The Puget Sound Machinery Depot, Seattle, Wash., is in the market for a lathe with a swing from 30 to 36 in. and 26 to 30 in. between centers.

Power Plant Equipment.

S. R. Cleveland, 31 Ten Eyck street, Watertown, N. Y., has been granted a franchise to sell electric current and power at Copenhagen and Carthage, N. Y. Temporary steam electric power plants will be erected, but later a hydraulic electric power plant will be erected at High Falls.

Bonds in the sum of $16,500 have been voted for the city of Weiser, Idaho, to provide funds for the improvement of its electric light and water works systems.

Benson & Johnson, Jamestown, N. Y., have been awarded general contract for pumps, power equipment and piping for water works system to be installed for the village of Sherman, N. Y.

The Village Board of Yorkville, Ill., will receive bids until December 1 for the construction of a concrete reservoir, 15-hp. gasoline engine, 250-gal. rotary pump, 5915 ft. of 6-in. cast iron pipe and pump house.

The Commissioners of DeKalb County, meeting at Auburn, Ind., will receive bids until November 23 for furnishing and erecting a complete pumping system for the county asylum. E. A. Shook, county auditor.

J. T. Castle, Pittsburgh representative of the Buckeye Engine Company, Salem, Ohio, has recently made sales of Buckeye engines as follows: Boggs & Buhl, Northside, Pittsburgh, two 500-hp. engines direct connected to 300-kw. generators; Jackson Brothers, Pittsburgh, gas engine direct connected to a 150-kw. generator; Kerr Coal Company, Freeport, Pa., steam engine for connection with a 150-kw. generator; United Fire Brick Company, Uniontown, Pa., 125-hp. steam engine, installed at the company's plant, Fair Hope, Pa.; Dickson Coal Company, Idamar, Pa., steam engine to operate a 150-kw. generator; Rosemont Coal Company, Rosemont, W. Va., steam engine to operate a 100-kw. generator. Recently the company shipped two of eight engines sold to the Capel Fan Company, to be used for operating fans at plants of the H. C. Frick Coke Company, in Fayette County, Pa. The company's plant at Salem, Ohio, is being operated double turn.

The Standard Boiler Plate & Iron Company, Niles, Ohio, is delivering 14 Hyde water tube safety boilers of 120-hp. each, 14 stacks for boilers and 14 puddle furnace stacks to Girard, Ohio, to be used in the new puddle and skelp mills being built at that place by A. M. Byers & Co., Pittsburgh.

Foundries.

Work on the new plant of the Badger Malleable & Mfg. Company, North Milwaukee, Wis., is well under way, and it is expected that it will be in operation soon after January 1. The largest of the three factory buildings is 80 x 144 ft. The plant will turn out malleable iron castings and specialties.

The Otis Elevator Company, New York and Chicago, has awarded contract to George T. Kelley, Yonkers, for a brick and steel foundry building to be erected at Locust and Atherton streets, Yonkers, N. Y. The new plant will have double the capacity of the present foundry building, and when completed will give employment to about 100 additional workmen. Work on the new building will be started at once and completed about March 1.

The Southern Wisconsin Foundry Company, Madison, Wis., is now installed in its new building, which affords greater capacity and better facilities than were available in the old quarters. The new foundry is of cement blocks, 50 x 145 ft., devoted principally to gray iron and brass castings and job work.

The General Electric Company, Schenectady, N. Y., has closed contracts for the ensuing year for casting and foundry work to be done in excess of the capacity of its Schenectady plant. The company last year purchased a large piece of property at Erie, Pa., and at that time contemplated erecting a

large foundry for the manufacture of all its special castings, but owing to various conditions this project was not consummated, and as yet no announcement has been made as to when it will be taken up. Baker & Shevlin, Saratoga, N. Y., are to make 60 per cent. of the castings, and the Davison-Namack Foundry Company, Lewis street, Ballston, N. Y., is to make 30 per cent. of the castings. The other 10 per cent. will be made by a foundry at Elmira, N. Y.

The Hodge Mfg. Company, Greenville, Pa., manufacturer of steel castings, has closed a contract with the Carnegie Steel Company by which it will furnish all the castings for the Greenville, Sharon, South Sharon, Youngstown and other mills of the Carnegie Steel Company for one year.

A new brass foundry has been established at Superior, Wis., which will be operated in connection with the Triskoo Iron Foundry at 136 Tower avenue and will be known as the Triskoo Iron & Brass Foundry. The company will shortly be ready to do all kinds of brass, aluminum and bronze casting.

Bridges and Buildings.

The Commissioners of Gibson County, meeting at Princeton, Ind., will receive bids to December 8 for the erection of 33 small bridges in the county. Harry R. Embree, auditor.

Fires.

The planing mill and machine shop of the Camden Shipbuilding & Repairing Company, Camden, N. J., were burned November 12, the loss being about $30,000.

The foundry of the Gibbes Machinery Company, Columbia, S. C., was destroyed by fire November 9.

The plant of the National Label Press, Bloomfield, N. J., was recently burned, the loss being estimated at $50,000.

The plant of the Shawmut Motor Company, Stoneham, Mass., was damaged $50,000 by fire November 13. It is understood that much valuable machinery was damaged.

The large tannery of the American Hide & Leather Company at Ballston, N. Y., was damaged $50,000 by fire November 12.

Hardware.

The plant of the Springfield Wire Screen Company, Springfield, Ill., which was destroyed by fire on October 9, is being rebuilt. The new factory will be 40 x 157 ft., of brick with cement floor and iron doors, and will be equipped with machinery suitable for the manufacture of doors and window screens. It is expected that the plant will be completed and running in about 30 days.

The Gibson Refrigerator Company, Greenville, Mich., has been formed and incorporated with a capital stock of $100,000, and has purchased the furniture factory plant of the Skinner & Steenman Company, which will be used for the manufacture of refrigerators. The building secured is three stories and basement, 60 x 360 ft. The new company is now engaged in overhauling the plant and putting it in shape to make refrigerators, some of which, it is expected, will be ready for the market by the first of the year. F. S. Gibson is president of the company. John Lewis, vice-president and general manager, was formerly secretary of the Ranney Refrigerator Company, of which he was one of the organizers.

The Stoughton Wagon Company, Stoughton, Wis., is installing a fire sprinkler equipment throughout its entire plant, and has also put in a large new boiler and dust collecting system.

The Bonney Vise & Tool Works, 3011-3015 Chestnut street, Philadelphia, Pa., has purchased and will occupy within the next 60 days a large new factory in Allentown, Pa. This factory will give the company space to develop its business rapidly, it being the intention to add attractive and staple drop forged machinists' and mechanics' tools and other specialties.

The Strong-Battelle Mfg. Company, Bellaire, Ohio, manufacturer of enameled ware, is completing work on a 60 x 150 ft. building, three stories, of brick and mill type construction, with fireproof doors and windows. When completed it will contain warehouse, packing and shipping departments, the space now occupied by these departments in the old plant to be utilized for manufacturing purposes. This will nearly double the capacity of the plant.

The Ward Fence Company, Decatur, Ind., has completed its fine new plant and it is in full operation, turning out ornamental wire, ornamental steel, picket, farm and poultry fence. The company states that business shows a large increase this year, in spite of the general depression.

Miscellaneous.

The Milwaukee Woven Wire Company, Milwaukee, Wis., intends to erect a three-story brick building, 102 x 120 ft., of mill construction, to replace the one that was recently destroyed by fire. The company will require a 100-hp. boiler with 125 lb. pressure. None of the other machinery was damaged.

The Norfolk Dock & Terminal Corporation, Norfolk, Va., recently incorporated with a capital stock of $500,000, intends to build docks, railroad terminals and other buildings on a 120-acre site opposite the Norfolk Navy Yard. The property has a frontage of 2000 ft. on deep water and is adjacent to the Belt Line Railroad. The officers and directors are: President, R. E. Griffith, vice-president of the American Cement Company; vice-president, Charles M. Barnett, president and general manager of the Chesapeake & Ohio Coal & Coke Company; secretary and treasurer, J. M. Umstadter, Norfolk representative of M. J. Drummond & Co., manufacturers of iron pipe; R. K. Cassatt, of Cassatt & Co., bankers, Philadelphia, Pa.; R. W. Leslie, president of the American Cement Company; M. J. Drummond, A. P. Page and Walter H. Taylor, Jr.

The Calorific Boiler Company has been incorporated with a capital stock of $100,000, with James Walt of Allentown, Pa., as president. The company has purchased the patterns, fixtures and good-will of the Calorific Heater Company and the Argand Boiler Company, formerly made by the Frederick D. Johnson Company and later by the Colonial Foundry Company of South Norwalk, Conn. The company expects to erect a new plant to manufacture a full line of house heating boilers. Offices will be established in New York.

The Standard Plate Glass Company, Pittsburgh, Pa., awarded last week a contract for a large addition to its plant at Butler, Pa., consisting of a steel building, 123 x 170 ft., the building of two additional furnaces and other equipment. It is the intention of the company to increase its output to 4,000,000 sq. ft. of plate glass per year.

The Pittsburgh White Metal Company, Pittsburgh, which has been in existence for about 20 years as a partnership, has been incorporated under the laws of Pennsylvania, with M. C. Rinehart, president, and E. E. Rinehart, Jr., secretary and treasurer.

The Youngstown Car Mfg. Company, Youngstown, Ohio, has received a second order for 200 all-steel coal mine cars from the Monongahela River Consolidated Coal & Coke Company, Pittsburgh. Complete delivery on the first lot has already been made.

The contract recently secured by the Riter-Conley Mfg. Company, Pittsburgh, from the St. Clair County Gas & Electric Company, East St. Louis, Ill., was for a gas holder of 1,500,000 cu. ft. capacity instead of 1,000,000 cu. ft. capacity, as printed last week.

Reports that the Ohio Iron & Steel Company, operating Mary Furnace at Lowellville, Ohio, would build a large brick manufacturing plant near its limestone quarries at Carbon, Pa., are untrue. The Carbon Limestone Company, which is an identified interest of the Ohio Iron & Steel Company, has large deposits of shale covering its limestone and is considering the erection of a plant to manufacture high grade paving block. A definite decision as to whether the plant will be built will be made in a short time.

The Wilder Metal Coating & Mfg. Company, Connellsville, Pa., manufacturer of steel sheets covered with a composition of aluminum, making the sheets impervious to corrosion, intends to install small pots for the purpose of coating sheets 20 x 28 in., hand dipped. The present capacity is only for large sheets.

The Rochester Railway & Light Company is arranging to erect on the Vincent Flats, Rochester, N. Y., a vertical retort gas plant to be operated under the Dessau system, now extensively used in Germany and England. It is claimed for the Dessau process that its use effects a saving of a large percentage of the ammonia and tar in the coal and creates less smoke. The vertical retorts also permit a more economical handling of the coal and coke in gas manufacture than the horizontal retorts. The first building of the new plant will be 80 x 100 ft., 60 ft. in hight, of brick, concrete and steel construction, and will have a capacity for 100 vertical retorts. It will cost $150,000.

The Nordberg Mfg. Company, Milwaukee, Wis., has been awarded the contract, at $47,515, by the city of Houston, Texas, for the 15,000,000-gal. water plant pump. The company is represented in Houston by H. A. Paine.

The North American Asbestos Company, with general offices in the Bank of the Republic Building, Kansas City, Mo., and asbestos deposits near Casper, Wyo., is making arrangements to put in a mill which will cost between $30,000 and $35,000 for the treatment of the mineral. Plans for the plant and its equipment are being drawn, and it is expected that construction will be begun in the spring.

W. M. Hazelton, Oneonta, N. Y., inventor of a coal burning automobile, run by steam, to be used for delivery and heavy truck work, is organizing a company for the purpose of erecting a factory and manufacturing the machine. Mr. Hazelton hopes to start construction on a new factory after the first of the year.

The Buffalo Drydock Company, Buffalo, N. Y., local branch of the American Shipbuilding Company, has awarded contract to the Great Lakes Dredge & Dock Company, Chicago, for a new dock, to be 615 ft. long and 110 ft. wide. The company also proposes to erect a joiner factory on Ganson street and a pumping station to operate the docks. The two latter items will be in charge of the local superintendent, Edward N. Smith.

The Aluminum Company of America, Niagara Falls, N. Y., has increased the construction gang working on the new rolling mill at plant No. 3, and expects to have the mill ready for operation not later than January 1.

The Iron and Metal Trades

Heavy Buying of Basic Pig Iron in Eastern Pennsylvania.

Asking Prices for Foundry Iron Generally Advanced.

One of the features of interest during the past week has been the heavy buying, on the part of three or four Open Hearth Steel works in eastern Pennsylvania, of Basic Pig Iron, for delivery during the first and second quarters. So far as we can trace the purchases, they aggregate about 80,000 tons, and were made on the basis of $16 delivered for the first quarter, and $16.25 for what little Iron was bought for the second quarter. Some Basic Iron has also been taken in the St. Louis District, and some large inquiries, including one for 10,000 tons, are under negotiation.

The leading distributing markets along the Lakes—Buffalo, Cleveland and Chicago—report large sales of Foundry and Malleable Irons during the past week, and now have generally put up their prices for delivery during the first and second quarters, but the new schedules have not yet been seriously tested. Indeed, the impression is spreading among buyers that the rise has been somewhat too rapid. Practically all the principal melters, large and small, have been covering at least minimum requirements, and many who entered the market before the election have made further purchases since then.

There has been activity, too, in some of the special Irons needed by Steel makers. There have been some further round sales of low phosphorus Pig Iron at $20.75, delivered at Eastern consuming points, and the market is now $21 to $21.50. There have been pretty large sales of Ferromanganese at close to $44, seaboard, but now higher prices are being asked and obtained.

The movement in Finished Iron and Steel is somewhat better in some lines, but on the whole the buying is developing slowly. In some of the staple lines, distributed chiefly by jobbers, the buying has been more confident and in greater volume.

In the semi-finished lines the interest is increasing. Pittsburgh reports that a local interest has contracted for a large quantity of Muck Bar, for the whole of 1909.

In the Rail trade no transactions of any magnitude are reported, but some large business is pending and is expected to shape up soon. The same is true of Structural Material. Fabricators have made little headway toward the conclusion of business pending, but there is a good deal of work in sight. Thus in the Chicago territory there are bids out which call for 77,000 tons of material, while there are plans under consideration which conservatively estimated involve 100,000 tons.

The Snyder interest of Pittsburgh has just awarded the contract for the largest Ore boat yet planned. It will be 605 ft. long and will require for its construction 7200 tons of Plates and Shapes, which are to be rolled by the Jones & Laughlin Steel Company. Another interest has ordered two packet freighters of a lake yard.

We note the placing of the order for a large number of bridges for the Philippine railroads.

There has been heavy buying of Old Material in the Chicago District, one mill alone purchasing in the last two weeks 15,000 tons of Railroad Wrought Scrap. There have been large railroad offerings throughout the country, but they have been easily disposed of. For much of this material consumers were overbid by dealers.

The Cast Iron Pipe industry is moderately active. Among the recent larger contracts was 4000 tons for Milwaukee. In Detroit the bids for 3500 tons were rejected and new bids called for. Amsterdam, N. Y., is in the market for 7300 tons and a Copper company for 4000 tons. The Southern Cast Iron Pipe makers have advanced their asking prices $1 to $2 per ton.

The Copper market has quieted down considerably and prices have receded. Electrolytic Copper is now selling at 14.25c.

A Comparison of Prices.

Advances Over the Previous Month in Heavy Type, Declines in Italics.

At date, one week, one month and one year previous.

	Nov.18, 1908.	Nov.11, 1908.	Oct.21, 1908.	Nov.20, 1907.
PIG IRON, Per Gross Ton:				
Foundry No. 2, Standard, Philadelphia	**$17.00**	$17.00	$16.75	$19.00
Foundry No. 2, Southern, Cincinnati	**16.25**	15.75	15.75	19.25
Foundry No. 2, Local, Chicago	**17.00**	16.50	16.50	20.00
Basic, delivered Eastern Pa.	**16.25**	16.00	16.00	17.75
Basic, Valley Furnace	**15.50**	14.50	13.85	18.00
Bessemer, Pittsburgh	**16.90**	16.40	15.65	20.90
Gray Forge, Pittsburgh	**15.15**	14.90	14.40	18.90
Lake Superior Charcoal, Chicago	19.50	19.50	19.50	25.00
BILLETS, &c., Per Gross Ton:				
Steel Billets, Pittsburgh	25.00	25.00	25.00	28.00
Forging Billets, Pittsburgh	27.00	27.00	27.00	30.00
Open Hearth Billets, Phila.	26.20	26.20	26.20	30.00
Wire Rods, Pittsburgh	33.00	33.00	33.00	34.00
Steel Rails, Heavy, at mill	28.00	28.00	28.00	28.00
OLD MATERIAL, Per Gross Ton:				
Steel Rails, Melting, Chicago	**15.25**	15.00	14.75	14.50
Steel Rails, Melting, Phila.	**16.00**	15.50	15.00	12.75
Iron Rails, Chicago	18.00	18.00	18.00	16.00
Iron Rails, Philadelphia	**20.50**	20.25	19.50	19.00
Car Wheels, Chicago	**15.50**	15.25	15.25	22.50
Car Wheels, Philadelphia	**16.00**	15.00	15.00	19.00
Heavy Steel Scrap, Pittsburgh	**16.00**	16.00	15.25	14.50
Heavy Steel Scrap, Chicago	**15.00**	14.50	13.75	12.00
Heavy Steel Scrap, Phila.	**16.00**	15.50	15.00	12.75
FINISHED IRON AND STEEL, Per Pound	Cents.	Cents.	Cents.	Cents.
Refined Iron Bars, Philadelphia.	**1.47**	1.45	1.45	1.75
Common Iron Bars, Chicago	1.50	1.50	1.50	1.75
Common Iron Bars, Pittsburgh.	1.40	1.40	1.40	1.70
Steel Bars, Tidewater, New York	1.56	1.56	1.56	1.76
Steel Bars, Pittsburgh	1.40	1.40	1.40	1.60
Tank Plates, Tidewater, New York	1.76	1.76	1.76	1.86
Tank Plates, Pittsburgh	1.60	1.60	1.60	1.70
Beams, Tidewater, New York	1.76	1.76	1.76	1.86
Beams, Pittsburgh	1.60	1.60	1.60	1.70
Angles, Tidewater, New York	1.76	1.76	1.76	1.86
Angles, Pittsburgh	1.60	1.60	1.60	1.70
Skelp, Grooved Steel, Pittsburgh	1.45	1.45	1.45	1.70
Skelp, Sheared Steel, Pittsburgh.	1.50	1.50	1.50	1.80
SHEETS, NAILS AND WIRE, Per Pound:	Cents.	Cents.	Cents.	Cents.
Sheets, Black, No. 28, Pittsburgh.	2.50	2.50	2.50	2.60
Wire Nails, Pittsburgh	1.95	1.95	1.95	2.05
Cut Nails, Pittsburgh	1.75	1.75	1.75	2.00
Barb Wire, Galv., Pittsburgh	2.40	2.40	2.40	2.50
METALS, Per Pound:	Cents.	Cents.	Cents.	Cents.
Lake Copper, New York	**14.50**	14.75	13.75	13.25
Electrolytic Copper, New York	**14.25**	14.50	13.25	13.00
Spelter, New York	**5.05**	5.05	4.77½	5.05
Spelter, St. Louis	**4.90**	4.90	4.62½	4.85
Lead, New York	**4.42½**	4.42½	4.22½	4.40
Lead, St. Louis	**4.30**	4.30	4.07½	4.25
Tin, New York	**30.25**	30.75	29.50	30.70
Antimony, Hallett, New York	**8.12½**	8.12½	7.75	9.50
Nickel, New York	45.00	45.00	45.00	45.00
Tin Plate, 100 lb., New York	$3.89	$3.89	$3.89	$4.09

Chicago.

FISHER BUILDING, November 18, 1908.—(*By Telegraph.*)

The buying movement which began in a moderate way just prior to election has resulted in the placing of numerous orders aggregating a large tonnage of Pig Iron, mainly for first quarter delivery. This in conjunction with a generally stronger sentiment regarding the development has instilled new vigor and firmness into what had been a weak and irregular price situation. Northern Iron, instead of holding rather insecurely at around $16, Chicago delivery, is now fairly established at $17 for shipment through the first quarter, and Southern makers are now able to enter this market with their price of $13, Birmingham. Most of the forward buying has been of a conservative character, and was evidently designed to cover no abnormal increase in consumption nor to guard speculatively against an unusual inflation of prices. The firming up of Pig Iron prices has not been without its effect in steadying values in finished lines. There is a decidedly stronger tone in Billets and Sheets, and both are now said to be squarely held at regular prices. Axle Billets are in better demand, and machinery builders are beginning to come into the market more liberally for Forging Billets. Inquiry regarding the amount of Structural business in prospect on which plans are well developed establishes the fact that there are 77,000 tons upon which bids are out and estimates are being made by the leading fabricating interest, besides which there is at least 100,000 tons involved in plans now under consideration. Recent railroad orders have furnished no important additions to mill bookings, al-

though there is about 100,000 tons of Rails for Western roads under negotiation. Rumors of impending purchases of great importance by the railroads are plentiful, and developments in this direction are being awaited on every side with great interest. In the Old Material market there is a good demand for Rerolling Rails, Heavy Melting Steel and rolling mill stock. The consuming interests are now able to absorb all that comes out, and prices on the leading grades are extremely firm with some general advances.

Pig Iron.—With last week's sales sheets footing up a larger tonnage than the week before, and accumulating inquiries pointing to a considerable volume of unplaced orders for forward requirements, furnacemen are stiffening up and the low prices current prior to the election are no longer obtainable. Northern producers who two weeks ago booked first quarter business at $16, delivered, are now asking $17 at furnace or $17.50, delivered, for shipments covering that period. The recent advance made in the Valley and other Ohio districts, where the minimum price is now reported to be $15.50, has removed a depressing influence that has hung over the local market for some time, the situation being thus cleared of complication by the elimination of competition from unusual sources. There is practically no more Southern Iron to be had at $12.50, Birmingham, even for prompt shipment, but $13 for first quarter is now firmly established and has formed the basis of transactions on nearly all the business placed for this delivery. With Northern Iron at $17, at furnace, and the Southern product at $17.35, Chicago, the spread that for several months has existed between the two is closed up, and they are now virtually on a parity. As a result of this readjustment the Southern interests have secured a fair share of the recent business placed. A prominent electrical concern is asking prices on 1000 to 2000 tons of No. 2 Foundry and 200 tons of High Silicon, and a local machinery manufacturer has an inquiry out for 500 tons of Southern Iron for first half. An order for 1500 tons of Foundry Iron was placed by an implement maker with a local furnace at $17, delivered, Chicago. There seems to be a scarcity of low grade Iron, on which prices are relatively high, and the same condition prevails with respect to off grades. The best price offered on a recent lot of 1000 tons of low grade Iron wanted for November and December delivery was $15.50. Consumers are plainly reluctant to follow the upward tendency of the market, and inquiries are not developing into orders at advanced prices as readily as before the market hardened. On the other hand, producers are not anxious to fill up furnace capacities through the second quarter at present prices, and while most of them are booking through the entire first half they are declining to take orders for exclusive second quarter delivery except at prices which buyers are not disposed to consider. Altogether, the situation shows improvement, both in the demand for and consumption of Iron. The following quotations are for November and December delivery, f.o.b. Chicago:

Lake Superior Charcoal	$19.50 to $20.00
Northern Coke Foundry, No. 1	17.50 to 18.00
Northern Coke Foundry, No. 2	17.00 to 17.50
Northern Coke Foundry, No. 3	16.50 to 17.00
Northern Scotch, No. 1	18.00 to 18.50
Southern Coke, No. 1	17.85 to 18.35
Southern Coke, No. 2	17.35 to 17.85
Southern Coke, No. 3	16.85 to 17.35
Southern Coke, No. 4	16.35 to 16.85
Southern Coke, No. 1 Soft	17.85 to 18.35
Southern Coke, No. 2 Soft	17.35 to 17.85
Southern Gray Forge	15.85 to 16.35
Southern Mottled	15.60 to 16.10
Malleable Bessemer	17.00 to 17.50
Standard Bessemer	17.90 to 18.40
Jackson Co. and Kentucky Silvery, 6 %	19.90 to 20.40
Jackson Co. and Kentucky Silvery, 8 %	20.90 to 21.40
Jackson Co and Kentucky Silvery, 10 %	22.90 to 23.40

(By Mail.)

Billets and Rods.—The demand for Forging Billets is growing more active. Several lots ranging from carloads up to 500 tons have been placed, in addition to which the leading interest secured an order of 1000 tons of Axle Billets from a local forge shop. This renewal of interest in Forging Billets indicates increased activity among the makers of machinery, many of whom have not been in the market for such material for a long time. Another feature of encouragement is noted in the greater firmness of prices, which are now reported to be absolutely maintained at the regular schedule for Forging Billets, of $28.50, Chicago. One sale of 350 tons and another of 400 tons, besides several carload lots, are reported at this figure. The continued demand for Wire products is bringing out specifications for Rods in good volume, along with a fairly satisfactory tonnage of new business. Prices, which are unchanged and firm, are as follows: Bessemer, $33; Basic, $33; Chain, $33, all at Pittsburgh.

Rails and Track Supplies.—The railroads are apparently in no haste to contract for their 1909 Rail requirements, and in consequence none of the business noted in last week's report as pending has been closed. In addition to the inquiries for 60,000 tons from Western roads, already reported, there is an inquiry for between 3000 and 4000 tons of Standard Section Rails from the Manistee & Northeastern Railroad. A leading Western road is also understood to be negotiating for 32,000 tons, making the total under consideration at the present time nearly 100,000 tons. Although recent orders for Spikes and Bolts have included no large lots, the amount of inquiry developing seems to indicate the existence of requirements that will soon result in early bookings of good sized tonnage. The continuation of weather favorable to track work is bringing out a fair run of specifications for supplies, among which are reported 2000 kegs of Spikes and 1500 kegs of Bolts entered by the Illinois Steel Company. There is a good demand for Light Rails, and the prospects are that the bookings for the present month will equal, if they do not exceed, the satisfactory record of October. One inquiry from an industrial line calls for 1900 tons, besides which there are several lots of smaller size on which figures are being asked. More or less irregularity exists in Light Rail prices, which are being cut about $1 per ton. We quote as follows: Angle Bars, accompanying Rail orders, 1908 delivery, 1.50c.; car lots, 1.60c.; Spikes, 1.80c. to 1.90c., according to delivery; Track Bolts, 2.15c. to 2.20c., base, Square Nuts, and 2.30c. to 2.35c., base, Hexagon Nuts. The store prices on Track Supplies range from 0.15c. to 0.20c. above mill prices. Light Rails, 25 to 45 lb., $26; 20-lb., $27; 16-lb., $28; 12-lb., $29. Standard Sections, Bessemer, $28; Open Hearth, $30, on lots of 500 tons and over; on smaller lots, $2 a ton extra.

Structural Material.—Little headway was made by fabricators last week toward the conclusion of business now pending. The only noteworthy contract closed was one of 1000 tons for a St. Louis insane asylum, taken by the American Bridge Company. Small orders of a miscellaneous character were more numerous, and whatever tardiness there is in the coming out of the more important contracts on which figures have been submitted seems attributable less to financial and market conditions than to the natural delay incident to the final adjustment of engineering details connected with construction plans. No decision respecting the award of the City Hall has yet been announced, though it is expected that this work will be given out in a few days. It is understood that bids on the new Cook County Hospital will go in about the middle of December. There is a large amount of business in sight, most of which seems reasonably sure to find its way into fabricator's shops without prolonged delay. As indicative of the situation in this respect it is shown that the leading interest has bids outstanding on 38,000 tons and is making additional estimates on 39,000 tons. Outside of these there are projects included in plans now in course of preparation, and which are expected to be submitted for estimates soon, which will require not less than 100,000 tons. Figures have been submitted by the American Bridge Company on a little over 90 per cent. as much tonnage in the year ending October 31, 1908, as in the preceding fiscal year; and what is of equal moment, the proportion of business secured by contract is fully as large as that of a year ago. Fabricating prices are still unsatisfactory, but the trade is hopeful of early betterment which, it is believed, will come with an increasing volume of business. The mills are getting more liberal specifications on plain material, and as a result the South Chicago mill is provided for several weeks ahead. Prices from store are 1.95c. to 2c. Mill prices at Chicago are as follows: Beams and Channels, 3 to 15 in., inclusive, 1.78c.; Angles, 3 to 6 in., ¼-in. and heavier, 1.78c.; larger than 6 in. on one or both legs, 1.88c.; Beams, larger than 6 in. on one or both legs, 1.88c.; Beams, larger than 15 in., 1.88c.; Zees, 3 in. and over, 1.78c.; Tees, 3 in. and over, 1.83c.

Plates.—The reviving influences that have stimulated the demand for rolled products in some other lines have been felt in Plates only to a limited extent. Orders are perhaps a little more numerous, but continue to represent immediate shop requirements and stock assorting orders from jobbers. Outside of a little betterment in new car construction, the large consumers of Plates are not actively in the market as yet. Price conditions are somewhat unsatisfactory and concessions of $2 per ton on mill shipments are not uncommon, and in some cases reach even beyond this figure. We quote mill shipments as follows: Tank Plates, ¼-in. and heavier, wider than 6¼ and up to 100 in. wide, inclusive, car lots, Chicago, 1.78c.; 3-16 in., 1.88c.; Nos. 7 and 8 gauge, 1.93c.; No. 9, 2.03c.; Flange quality, in widths up to 100 in., 1.88c., base, for ¼-in. and heavier, with the same advance for lighter weights; Sketch Plates, Tank quality, 1.88c.; Flange quality, 1.98c. Store prices on Plates are as follows: Tank Plates, ¼-in. and heavier, up to 72 in. wide, 2c. to 2.10c.; from 72 to 96 in. wide, 2.10c. to 2.20c.; 3-16 in. up to 60 in. wide, 2.10c. to 2.25c.; 72 in. wide, 2.30c. to 2.40c.; No. 8, up to 60 in. wide, 2.10c. to 2.15c.; Flange and Head quality, 0.25c. extra.

Sheets.—Buyers seem to be taking hold in a way that promises considerable betterment in the demand for Sheets. There is less of a disposition with jobbers and manufacturers to restrict their orders to minimum present requirements, as is indicated by the more extended specifications included in recent orders. As a result of improved conditions prices have firmed up and we are advised that the regular schedule is now being generally observed by the mills. We quote mill shipments as follows, Chicago: Blue Annealed,

No. 10, 1.98c.; No. 12, 2.05c.; No. 14, 2.08c.; No. 16, 2.18c.; Box Annealed, Nos. 17 to 21, 2.43c.; Nos. 22 to 24, 2.48c.; Nos. 25 and 26, 2.53c.; No. 27, 2.58c.; No. 28, 2.68c.; No. 29, 2.78c.; No. 30, 2.88c.; Galvanized Sheets, Nos. 10 to 14, 2.63c.; Nos. 15 and 16, 2.83c.; Nos. 17 to 21, 2.98c.; Nos. 22 to 24, 3.13c.; Nos. 25 and 26, 3.33c.; No. 27, 3.53c.; No. 28, 3.73c.; No. 30, 4.23c.; Black Sheets from store: Blue Annealed, No. 10, 2.15c.; No. 12, 2.20c.; No. 14, 2.25c.; No. 16, 2.35c.; Box Annealed, Nos. 18 to 21, 2.60c.; Nos. 22 to 24, 2.65c.; No. 26, 2.70c.; No. 27, 2.75c.; No. 28, 2.85c.; No. 30, 3.25c.; Galvanized from store: Nos. 10 to 16, 3c.; Nos. 18 to 20, 3.15c.; Nos. 22 to 24, 3.30c.; No. 26, 3.50c.; No. 27, 3.70c.; No. 28, 3.90c.; No. 30, 4.40c. to 4.45c.

Bars.—There seems to be no diminution in the specifications of Steel Bars coming to the mills. It is especially significant that manufacturers, other than implement makers, are contributing a greater proportion than was the case a few weeks ago. Mills of the leading interest are running practically full. The independent mills are not yet steadily engaged at full capacity. No appreciable change is seen in the Bar Iron situation, there being but little, if any, increase in the aggregate of new business in specifications. It is expected, however, that as the Car shops fill up more new business will develop. Quotations, Chicago, are as follows: Steel Bars, 1.58c., with half extras; Iron Bars, 1.50c.; Hoops, No. 13, and lighter, 1.98c., full extra Hoop card; Bands, No. 12 gauge, and heavier, 1.58c., half extra Steel Bar card; Soft Steel Angles and Shapes, 1.68c., half extras. Store prices are as follows: Bar Iron, 2c. to 2.15c.; Steel Bars, 1.90c. to 2c.; Steel Bands, 1.90c., as per Bar card, half extras; Soft Steel Hoops, 2.25c. to 2.35c., full extras.

Merchant Pipe.—The approaching close of lake navigation is expected to hurry forward shipments for points in Northwestern territory; and on this account considerable tonnage will be moved within the next few days. Jobbers in general, however, continue to pursue the policy of placing sorting up orders at frequent intervals, and are not inclined to anticipate a prospective demand by enlarging their stocks. The following mill discounts are quoted: Black Pipe, ¾ to 6 in., 73.2; 7 to 12 in., 70.2; Galvanized, ¾ to 6 in., 63.2. These discounts are subject to one point on the base. From store, in small lots, Chicago jobbers quote 73 per cent. on Black Steel Pipe, ¾ to 6 in. About three points above these prices is asked for Iron Pipe.

Boiler Tubes.—The railroads are buying Locomotive Tubes in a moderate way for repair work and are likely to find use for more of them for this purpose as traffic grows. Merchant Tubes are quiet and the demand reflects no decided improvement in boiler building. Mill quotations for future delivery, on the base sizes, are as follows: 2¾ to 4¼ in., inclusive, Steel Tubes, 63.2; Iron, 50.2; Seamless, 50.2; 2½ in. and smaller, and lengths over 18 ft., and 2½ in. and larger, and lengths over 22 ft., 10 per cent. extra. Store prices are as follows:

	Steel.	Iron.	Seamless.
1 to 1½ in.	35	35	35
1¾ to 2¼ in.	50	35	35
2½ in.	52½	35	35
2¾ to 3 in.	60	47½	47½
6 in. and larger	50	35	..

Merchant Steel.—Little new business is being entered, but a fairly satisfactory volume of specifications for Tires, Bars and miscellaneous Shapes is coming in from implement makers and jobbers. The latter are beginning to stock up in a conservative way, that betokens returning confidence in the stability of the market and future demand. We quote as follows: Planished or Smooth Finished Tire Steel, 1.78c.; Iron Finish, up to 1½ x ½ in., 1.73c., base, Steel card; Iron Finish, 1½ x ½ in. and larger, 1.58c., base, Tire card; Channels for solid Rubber Tires, ¾ to 1 in., 2.08c., and 1⅛ in. and larger, 1.98c.; Smooth Finished Machinery Steel, 2.08c.; Flat Sleigh Shoe, 1.63c.; Concave and Convex Sleigh Shoe, 1.83c.; Cutter Shoe, 2.05c.; Toe Calk Steel, 2.13c.; Railroad Spring, 1.98c.; Crucible Tool Steel, 7¼c. to 8c., and still higher prices are asked on special grades. Cold Rolled Shafting on contracts for 100 tons and over 57 per cent. off; 56 per cent. off in car lots; 52 per cent. in less than car lots, on which carload freight is allowed within base territory.

Metals.—Under the influences of a lively buying movement Copper prices advanced early last week to around 15c. for Lake, but lacked the sustained support necessary to carry it forward, or even hold it at that notch. When it began to sag buyers withdrew from the market, and the last few days of the week brought out little business. Before the movement was arrested, however, quite a number of the more important consumers covered their requirements for 60 days. Lead is inactive, while Spelter is in better demand and slightly stronger. Quotations are as follows: Casting Copper, 14¼c.; Lake, 14½c. to 14¾c., in car lots, for prompt shipment; small lots, ¼c. to ⅜c. higher; Pig Tin, car lots, 32½c.; small lots, 34½c.; Lead, Desilverized, 4.55c. to 4.65c., for 50-ton lots; Corroding, 4.80c. to 4.90c., for 50-ton lots; in car lots, 2¼c. per 100 lb. higher; Spelter, 5c.; Cookson's Antimony, 10½c., and other grades, 9¾c. to 10¼c.; Sheet Zinc is $7, f.o.b. La Salle, in car lots of 600-lb. casks. On Old Metals we quote: Copper Wire, 13¾c.; Heavy Copper, 13½c.; Copper Bottoms, 12¼c.; Copper Clips, 13½c.; Red Brass, 12¾c.; Yellow Brass, 10c.; Light Brass, 7c.; Lead Pipe, 4.35c.; Zinc, 3¾c.; Pewter, No. 1, 21c.; Tin Foil, 24c.; Block Tin Pipe, 26c.

Cast Iron Pipe.—All bids submitted last week on the 3500 tons required by the city of Detroit were rejected and new bids were called for on a letting scheduled for November 17. A contract for 4000 tons of 36-in. was awarded by the city of Milwaukee to the United States Cast Iron Pipe & Foundry Company, which also secured 400 tons for St. Marys, Kan. Next year's requirements are coming up for consideration and a good many inquiries concerning forward deliveries are being received. Founders are not willing to apply present prices to shipments much beyond January 1, but insist on a substantial advance on any deliveries extending over the first half. We quote nominally per ton, Chicago, as follows: Water Pipe, 4 in., $27; 6 to 12 in., $26; 16 in. and up, $25, with $1 extra for Gas Pipe.

Old Material.—The market has not only held its own but has registered advances on several grades. All the railroad material offered last week brought good prices, and in some cases the figures overtopped the market, as a result of the eagerness of dealers to secure material needed to complete deliveries on short sales. Among the prices realized on material contained in the Sante Fé's list the following are reported: No. 1 Cast, $13.60; Springs, Knuckles and Couplers, $13.80; Rerolling Steel Rails, $17.05; Frogs, Switches and Guards, $14.50. The local rolling mills have been liberal buyers of Railroad Wrought, one of them having taken on about 15,000 tons within the past two weeks. A large portion of this tonnage, including some recent purchases, were secured at a price of $14.50, mill delivery, equivalent to about $14.25, Chicago. There is a better demand for Iron rolling stock, and a local die plate maker is reported to be in the market for a round tonnage of Fish Plates. Heavy Melting Steel continues firm, and there seems to be very little, if any, available under $15, while dealers generally are asking from 25c. to 50c. above this price. The following prices are per gross ton, f.o.b. Chicago:

Old Iron Rails	$18.00 to $18.50
Old Steel Rails, rerolling	17.25 to 17.75
Old Steel Rails, less than 3 ft.	15.25 to 15.75
Relaying Rails, standard sections, subject to inspection	22.50 to 23.50
Old Car Wheels	15.50 to 16.00
Heavy Melting Steel Scrap	15.00 to 15.50
Frogs, Switches and Guards, cut apart	14.50 to 15.00
Mixed Steel	10.25 to 10.75

The following quotations are per net ton:

Iron Fish Plates	$17.00 to $17.50
Iron Car Axles	20.00 to 20.50
Steel Car Axles	17.75 to 18.25
No. 1 Railroad Wrought	14.25 to 14.75
No. 2 Railroad Wrought	13.25 to 13.75
Springs, Knuckles and Couplings	14.50 to 15.00
Locomotive Tires, smooth	14.75 to 15.25
No. 1 Dealers' Forge	11.25 to 11.75
Mixed Bushelling	8.50 to 9.00
Iron Axle Turnings	8.25 to 8.75
Soft Steel Axle Turnings	8.25 to 8.75
Machine Shop Turnings	8.25 to 8.75
Cast Borings	7.25 to 7.75
Mixed Borings, &c.	7.25 to 7.75
No. 1 Mill	8.50 to 9.00
No. 2 Mill	7.50 to 8.00
No. 1 Boilers, cut to Sheets and Rings	10.00 to 10.50
No. 1 Cast Scrap	13.75 to 14.25
Stove Plate and Light Cast Scrap	12.25 to 12.75
Railroad Malleable	13.50 to 14.00
Agricultural Malleable	11.50 to 12.00
Pipes and Flues	10.50 to 11.00

Birmingham.

BIRMINGHAM, ALA., November 16, 1908.

Pig Iron.—The demand continues active. The buying movement, starting directly after the election, has resulted in orders being taken in this district for 80,000 to 100,000 tons. Practically all of this has been sold for delivery over the remainder of this year and the first quarter of 1909, although in some instances deliveries range over first half. From the producers' standpoint the market is in a most satisfactory condition, the price of $13, Birmingham, being firmly maintained for immediate delivery as well as for first quarter of next year. Producers claim that the sales made the past week have all been at $13, Birmingham, or better, and it is highly improbable that any cheaper price has been made. One sale is reported of 200 tons of 4 per cent. Silicon for immediate shipment to a Cleveland, Ohio, foundryman at $14, Birmingham. The company making this sale seems to be practically out of the market for first quarter Iron, as it has positively refused several *bona fide* offers for small lots at $13, Birmingham. While no sales have been reported other than a few small lots of special Iron at prices higher than quoted, there is a general tendency toward an advance. The fact that railroads are preparing to begin new construction and repair work makes the prospects for sales to this trade very bright. Previous to last week the bulk of the Iron sold was to the Cast Iron Pipe trade, but the

past week inquiries have been coming in from all lines of trade, which would indicate that melters generally have come to the conclusion that the time is ripe to cover for their requirements for first quarter, and while no extraordinary buying movement or advance in price is expected, the outlook for a gradual improvement is good. No new furnaces are reported in operation this week, nor has there been any decrease in production.

Cast Iron Pipe.—Southern producers have advanced quotations on Cast Iron Pipe from $1 to $2 per ton, and while it is not probable they are getting the advance as yet, except on small sizes, they confidently expect the market within the very near future to come up to the advance. The principal contracts placed last week were for 1800 tons for the city of Nashville, Tenn., and 1250 tons for Gadsden, Ala. These contracts were awarded to the United States Cast Iron Pipe & Foundry Company. The contract for Seattle, Wash., for 1000 tons, is reported awarded to the American Cast Iron Pipe Company. The principal contracts in sight include a 7300-ton inquiry from New Amsterdam, N. Y., to be let November 24; 4000 tons from a Copper company, and 1500 tons from a water company near San Francisco. The last two inquiries come by wire and actual date of letting is not specified. We quote as follows for Water Pipe, f.o.b. cars here, per net ton: 4 to 6 in., $24; 8 to 12 in., $23; over 12 in., average $22, with $1 per ton extra for Gas Pipe.

Old Material.—Dealers report an increased demand for Old Iron Axles and No. 1 Steel, and an advance in price on these grades has resulted. The business done the past week has been considerably more than in the week previous, and the outlook is very encouraging. We quote dealers' asking prices as follows, per gross ton, f.o.b. cars here:

Old Iron Rails	$14.50 to $15.00
Old Iron Axles	16.00 to 17.00
Old Steel Axles	13.00 to 13.50
No. 1 Railroad Wrought	13.50 to 14.00
No. 2 Railroad Wrought	10.50 to 11.00
No. 1 Country Wrought	11.00 to 11.50
No. 2 Country Wrought	9.50 to 10.00
No. 1 Machinery	11.00 to 11.50
No. 1 Steel	10.00 to 10.50
Stove Plate and Light Cast	9.50 to 10.00
Cast Borings	5.00 to 5.50

San Francisco.

SAN FRANCISCO, November 11, 1908.

The volume of business on the Pacific Coast shows no marked increase since last report, but in most lines a slight improvement is reported, and the movement is already much greater than it was two or three months ago. While few inquiries of much magnitude are being received, there are enough small transactions under way to give the local merchants great encouragement. Transactions during October showed a larger volume than for any previous month of the year, and from the present situation it is judged that the two remaining months will bring a further improvement. The demand for machinery and supplies for the mining districts is somewhat larger than it has been, but there is still a noticeable lack of activity in that department. Drill Steel is moving more freely, the Los Angeles Aqueduct Commission having placed orders for several carloads, though the mines are not now in the market for any large quantities. The inquiry for Steel Rails continues to increase, and there is already some movement in this line, with a prospect of a considerable tonnage within the next few months, as numerous large electric railroad projects are now under way. Very little business is developing in the line of oil well supplies, which are likely to remain quiet through the winter, owing to the impossibility of hauling materials during the muddy weather. The situation in regard to Structural Material is more satisfactory, as the large Eastern fabricators have undertaken work on a number of large buildings, and some of the local shops have about all the work they can handle for the present. The movement of Cast Iron Pipe shows some increase, but there are few additional inquiries that will require any large tonnage in the immediate future. Some Pig Iron has been moved at a material reduction, and neither Pig Iron, Coke nor Old Material shows any change for the better.

Structural Material.—The tonnage of Structural Steel required for work in San Francisco and Los Angeles during October was large, in comparison with the preceding months, and contracts have recently been let on a few structures of considerable size. The greatest volume of business, however, is still for comparatively small work, and much of this is being taken care of by local fabricators, some of whom have enough work on hand to keep them occupied for a month or two to come. The building record for October, while hardly as good as that for September, shows little decline, the valuation of permits making a total of $3,403,897, in comparison with $3,799,000 for the month preceding, while contracts let for Steel frame buildings amounted to about $1,000,000. Estimates of the population show that the needs of the city are rapidly increasing, and with money becoming available in greater quantities for building purposes, both from local banks and from outside sources, many delayed projects are to be carried out during the next few months. Few new contracts have been placed from prospective builders, and a large volume of business is looked for during the month. The contract for supplying and installing the Iron and Steel work for the Mission Grammar School has been awarded to Dyer Bros. for $30,148. A contract calling for a considerable tonnage has also been let for a large building at the corner of Fifth and Market streets. The Western Iron Works is to supply Steel for a three-story building at Powell and Eddy streets for $9650. Contracts have been let for the Columbia Theater at the corner of Geary and Mason streets, which will cost $265,000. Plans are now under consideration for a new Hall of Justice, though the construction is likely to be delayed for some time. Among the larger local structures now in prospect are the Pacific Union Club, on California street, to cost $500,000, and a six-story structure for D. N. & E. Walter & Co., at Stockton and O'Farrell streets, to cost $225,000. Numerous small projects are under way in the smaller towns of the State, including a Steel tower for water works at Gridley, Cal., bids on which have been called for; a similar tower, to cost about $30,000, for Yuba City, Cal., and municipal buildings and several Steel and reinforced concrete bridges at Santa Cruz, Cal. A fair tonnage of reinforcing Bars for concrete construction is required in the northern coast cities, where this particular class of construction is at present more favored than in San Francisco.

Pig Iron.—Local foundry operations are gradually being resumed, though the situation is far from normal, and the work in general is on a small scale. The foundries still have large quantities of Pig Iron on hand, and are not likely to require any additional stock for several months. With occasional lots of foreign Pig Iron coming in the importers and dealers are carrying much heavier stocks than is desirable, and there is considerable pressure to sell on the part of many holders. Prices are accordingly unsettled. There has been some liquidation recently, a large lot of Hang Yang No. 3 being moved as low as $17. Good Continental Pig Iron is still held for about $23, but little has been moved at that price. Some No. 3 Cleveland Pig Iron is offered in this market for about $22.50. The British ship Acamas arrived November 2 with 500 tons of Continental Pig Iron and 2064 tons of Coke, consigned to Meyer, Wilson & Co.

Cast Iron Pipe.—More Cast Iron Pipe is moving than for some time, though only one contract of any importance has been let during the last two weeks. The contract for the Los Angeles Aqueduct, amounting to about 3000 tons, was taken by the Crane Company. Aside from this the tonnage now moving is small, but there is an inquiry for 1175 tons for the San Diego city water works, consisting mostly of large sizes, 24 and 26 in. Pipe comprising the bulk of the requirement. Numerous inquiries are also being received for smaller projects. It is now evident that the installation of the new fire protection system in San Francisco is to take several years, and plans are being made for the disposal of the bonds in small amounts, to pay for the Pipe as it is needed. Some fault has been found with the authorities for specifying Cast Iron Pipe for this construction, as it is feared that this material would not stand the strain of a possible earthquake. The city of Oakland has informed the People's Water Company of that city that the municipal water bills will not be paid until the company installs the new mains and fire hydrants that were promised some time ago. The city of Santa Cruz is agitating a proposition to issue bonds for the reconstruction and extension of the municipal water system. The cities of Marin and Sonoma counties are discussing a project for a water distributing system to supply all the most important towns of the two counties. The estimated cost of the Pipe line is about $1,600,000. The town of Gridley, Cal., is in the market for 300 ft. of 8-in. Pipe, 2720 ft. of 6-in. and 1600 ft. of 4-in. The city of Los Angeles has called for bids on Cast Iron Pipe fittings for the ensuing year. The quotations on ordinary lots of Cast Iron Pipe are unchanged, being $36 for 4 to 6 in., $35 for 8 to 12 in., $34 for over 12-in.; and $1 extra for Gas Pipe, though some concessions are reported on large lots.

Merchant Pipe.—The movement of Merchant Pipe for the California oil wells is small at present, and no orders for round lots have been received recently from any quarter. Numerous small orders are being filled by the coast jobbers, however, and the total tonnage required on the coast, while somewhat less than at the beginning of October, is still very fair. The differential on jobbers' carloads remains unchanged, as follows:

	Steel. Black. %	Steel. Galv. %
⅛ to ¼ in	56.5	40.5
⅜ in	58.5	44.5
½ in	60.5	48.5
¾ to 6 in	64.5	54.5
7 to 12 in	61.5	46.5
Extra strong, plain ends:		
⅛ to ⅜ in	49.5	37.5
½ to 4 in	56.5	44.5
4½ to 8 in	52.5	40.5
Double extra strong, plain ends:		
½ to 8 in	45.5	34.5

Old Material.—Stocks of Iron and Steel Scrap in San Francisco are burdensome, and accumulations are increasing rather than diminishing. Prices are still badly demoralized, as there is considerable pressure to sell among the smaller dealers, and no definite quotations are given. The only demand is for heavy Cast Iron machinery Scrap, small lots of which have been moved at about $16. A shipment of 648 tons of Scrap Iron has just arrived from Honolulu.

The armor plate vault of the first National Bank, made by the Bethlehem Steel Company, and weighing about 300 tons, is now being put in place. The vault is in sections of 23 tons each.

A transaction has just been concluded by which Charles M. Schwab, acting for the Bethlehem Steel Corporation, has purchased the property of the San Francisco Drydock Company, including a site of 10 acres, with two large stone graving docks, at Hunter's Point, San Francisco, and three floating dry docks at the foot of Sixteenth street. The larger dry dock at Hunter's Point, 750 ft. long, with a depth of 30 ft., is considered one of the finest in the world. The smaller one is 490 ft. long and 24 ft. deep. There is also at Hunter's Point a pumping plant with a capacity of 150,000 gal. per minute. Extensive marine repair shops are to be installed at the Hunter's Point site, and the dry docks are to be operated in connection with the Union Iron Works. Mr. Schwab intends to carry out plans for a new dry dock at Hunter's Point, which have been under consideration by the San Francisco Drydock Company for some time, though he has not yet decided when the improvement will be made. The plans are for a dock 1050 ft. long and 34 ft. deep.

The launching of the collier Promethus, which will take place December 5, at the Mare Island Navy Yard, will be largely attended by men engaged in the Iron trade throughout California. The event is regarded as especially notable, as the Promethus is the first steel vessel to be constructed by the United States Government at one of its Pacific Coast navy yards.

The city of Los Angeles is in the market for 4990 ft. of riveted Sheet Steel Pipe. Bids will be opened November 16.

J. M. Judson and others are preparing to erect a car manufacturing plant at Vancouver, Wash., to cost about $150,000.

E. E. Quick, F. B. Prescott, J. C. McGrath and C. Webb have filed articles of incorporation at Portland, Ore., for the Fulton Iron & Steel Works Company, with a capital stock of $3,000,000.

Baker & Hamilton, the large San Francisco hardware merchants, have occupied their new jobbing quarters at 433-481 Brannan street, near the line of the Southern Pacific Railroad. The main building contains 212,850 sq. ft. of floor space, and the Iron warehouse is 95 x 240 ft..

The West Coast Wire & Iron Works has been incorporated in San Francisco, with a capital stock of $10,000, by R. Brownell, E. C. Davis, J. C. W. Svendsen, J. and A. L. Scherling.

The Byron Jackson Iron Works and a number of other local manufacturers have complained that the specifications in the call for bids for steam turbines and pumps for the auxiliary fire protection system have been prepared in such a way as practically to shut out local bidders. The matter was discussed at length last Saturday, and the local manufacturers have been given another week to formulate their requests.

The Surprise Corporation has been organized at San Diego, Cal., for the purpose of manufacturing tools and machinery. The capital stock is $100,000, and the directors are A. G. Riordan, C. F. Meehan and W. G. Peterhaus.

The Union Oil Company has completed plans for a pumping plant and a group of large Steel oil tanks at San Diego, Cal., and announces that work will soon be started.

St. Louis.

ST. LOUIS, MO., November 16, 1908.

From the fact that the transfer of all railroad freight is confined to one company, the report of the Terminal Company covering the freight movement for the past month is a quite reliable index of St. Louis manufacturing and trade conditions. This report shows that the company handled as many cars last month as for the corresponding month in 1907. The leading local reinforced concrete company states that the demand for Steel Bars for the past six months has, in tonnage, been equal to the same period last year. The local agent of a leading fabricator finds that his sales of Structural Material for October equaled in tonnage those of the previous six months. The demand for Wrought Iron Pipe is now within three-fourths of normal. For Steel Wire there is an increasing demand from manufacturers and jobbers. The inquiry for Tool Steel is better, and an increased demand from railroads for engine and car material and Track Supplies is noted. It is estimated that the week's sales of Pig Iron will reach a total of 30,000 tons. The principal stove manufacturers are having a heavy demand from the South and Southwest. The leading producers of Lead, Spelter and Antimony report a pretty good demand. Inquiries for new cars are still coming into the large local company.

Coke.—While the attention of consumers has been directed more especially to Pig Iron, there has been quite a good inquiry for Coke, though no large sales are reported. The leading sales agencies find their customers are ordering out very freely on contract and seem disposed to carry larger stocks than was the case earlier in the fall. We hear that one of the largest producers has withdrawn from the market, and while some of the leading Connellsville companies will accept business for shipment over the entire year, most of them are disposed to book contracts for the first half of 1909 only. The St. Louis Blast Furnace Company, not having closed its contract for Coke for next year's requirements, is reported to be negotiating for a supply. Sellers state that most of the inquiries pending are also for shipment over 1909. We quote as follows: 72-hr. Foundry, $2.15 to $2.50, at oven, Connellsville; Furnace, $1.85 to $2.10, at oven, Connellsville. The market for next year's delivery is stronger than for shipment over the balance of 1908.

Pig Iron.—All the local sales agencies report an active demand for Pig Iron of all grades. While a portion of the sales was for November-December shipment, the bulk was for shipment over the first quarter of 1909 and a moderate quantity for shipment over the second quarter. Sales for the second quarter were limited, owing to the difficulty in placing them, and in no case were orders booked except as a part of a sale for the first half of 1909. Producers refuse also to authorize contracts to extend beyond June. Among the chief sales made this week were 3000 tons of Southern Foundry to a leading St. Louis stove manufacturer, 4000 tons of Malleable to one of the local foundries and 1000 tons of Ohio Strong Foundry to one of the car manufacturing companies. It is reported that two orders for Malleable Bessemer, aggregating 4000 tons, were placed on Friday for shipment over the first half of 1909. Notwithstanding the quite free buying reported since November 1 the demand is still good, one of the leading sales agencies having inquiries aggregating 10,000 tons, which will probably be placed during the month, and other houses are also in receipt of inquiries, principally for Southern Iron. We understand that some Southern furnaces having stocks on hand and being anxious to move them before the end of the year have authorized some contracts to be made on the basis of $12.50, Birmingham. It is also reported on good authority that a leading Alabama company sold two or three lots, aggregating in the neighborhood of 4000 to 5000 tons, for November-December shipment, at a price equal to $12.30, Birmingham. Ohio Malleable Bessemer has been advanced to $16 for No. 2 Foundry, at Ironton.

Old Material.—The market for Scrap Iron shows more activity and, besides liberal transactions on the part of dealers, comprises more inquiries from foundries and rolling mills, in consequence of which there has been a further slight advance on several items. A confident feeling prevails and a gradual increase in the demand from rolling mills and foundries is looked for. The only offering from railroads is one lot of 600 tons of miscellaneous Scrap by the Mobile & Ohio. One large company reports the sale of 5000 tons of Scrap Iron and Steel, rolling mill and foundry grades. Another local company advises of sales aggregating 3500 tons of miscellaneous Scrap, while a third firm's sales comprise 2500 tons, including 1000 tons of Relaying Rails, which continue in good demand and in short supply. We quote as follows, f.o.b. St. Louis, per gross ton:

Old Iron Rails	$17.00 to $17.50
Old Steel Rails, rerolling	15.50 to 16.00
Old Steel Rails, less than 3 ft	14.25 to 14.75
Relaying Rails, standard sections, subject to inspection	24.00 to 24.50
Old Car Wheels	15.50 to 16.00
Heavy Melting Steel Scrap	14.25 to 14.75
Frogs, Switches and Guards, cut apart	14.25 to 14.75
Mixed Steel	10.25 to 10.75

The following prices are per net ton:

Iron Fish Plates	$16.00 to $16.50
Iron Car Axles	19.50 to 20.00
No. 1 Railroad Wrought	14.50 to 15.00
No. 2 Railroad Wrought	13.50 to 14.00
Railway Springs	13.00 to 13.50
Locomotive Tires, smooth	13.50 to 14.00
No. 1 Dealers' Forge	11.50 to 12.00
Mixed Borings, &c	6.50 to 7.00
Machine Shop Turnings	9.00 to 9.50
No. 1 Boilers, cut to Sheets and Rings	9.50 to 10.00
No. 1 Cast Scrap	13.50 to 14.00
Railroad Malleable	11.50 to 12.00
Agricultural Malleable	10.50 to 11.00
Pipes and Flues	10.00 to 10.50

Finished Iron and Steel.—The leading interest in Steel reports an order for 400 tons Structural Material having been placed, together with several smaller lots. The branch office of an independent company is having a good demand from local and outside fabricators. The local agent of a leading fabricating company received orders for more Structural Material tonnage in October than for six months previous. The inquiry from railroads for Bars, Angles, Tees, Plates and Sheets is becoming more general and for larger quantities. Business is better with supply foundries and consumers that have shops than with jobbers. There is

more inquiry from railroads for Standard Rails, and prospective electric lines are also heard from. Light Rails continue in demand from lumber interests. For Track Material there is an urgent call.

Lead, Spelter, &c.—There is a fair demand for Pig Lead, but transactions are checked by the views of sellers; 4.30c. is offered and 4.35c. is asked. Lead Ore is in fair demand and held at $28.50 to $30 per 1000 lb., Joplin basis. Spelter is in good demand, with 4.97½c. bid and 5.05c. asked. Zinc Ore is strong at $38 to $39 per ton, Joplin basis, bid. Producers are holding at $40, consequently very little is moving. Stocks are reported to be light at the East and the tendency of the market is upward. The demand from Brass and galvanizing interests continues urgent. Copper is strong and higher.

Contracts for the erection of the superstructure of the McKinley Bridge over the Mississippi River will be let in the near future. The bridge, buildings and land in St. Louis represent an investment of about $5,000,000.

The Pressed Steel Car Company states that it is now having more inquiry for new cars from various Western railroads.

The Medart Patent Pulley Company reports that the demand for pulleys has increased this month.

Merchant sellers of metal working machinery report an improved demand, part of which is coming from railroads.

Philadelphia.

PHILADELPHIA, PA., November 17, 1908.

Heavy buying continues to characterize the Iron and Steel markets. The Steel making grades of Pig Iron have been the center of interest, and in the aggregate some 50,000 tons have been sold for delivery in this territory, the greater part for shipment in the first quarter of 1909. Some good buying has also developed in the Foundry grades, while Forge Iron has shown a little more activity. A marked improvement is also to be noted in finished lines, and an increased volume of business is reported in every class except Billets and Sheets. Some of the Plate mills have taken a normal volume of new business the past week, while a satisfactory tonnage has also been taken by some of the Structural mills. Low prices made by some makers of Refined Iron Bars have been withdrawn, and this branch of the trade is in more satisfactory shape. Prices all along the line are decidedly firm, and it would appear that those who have heretofore been inclined to shade quotations are now in line, and an advance ranging from 25c. to 50c. a ton is now being asked for some grades of Iron. Consumers in a number of instances would be willing to anticipate their wants, but are not being encouraged by sellers, who look forward to still further advances in Pig Iron and some finished lines. The market is decidedly stronger, but sellers have the situation well in hand, and any undue advance in prices is not anticipated.

Pig Iron.—The market has been decidedly active, and further advances in the prices of some grades are noted. The Steel making grades have been the center of interest. Sales of Basic totaled 45,000 tons, while about 5000 tons of Low Phosphorus Iron was also disposed of. Transactions in Basic included one 20,000 ton and one 10,000 ton lot, at $16, delivered, one 5000 ton lot, at $16.25, and an aggregate of smaller lots totaling 10,000 tons, at prices ranging from $16 to $16.25, practically all of it for first quarter delivery, but in some instances shipments will begin the coming month. Prices for Basic have now been advanced, and there is practically no $16 Iron to be had, buyers in some cases being willing to pay $16.25 for first quarter delivery, but sellers have sold up pretty well, and are not anxious to book more orders. In some instances buyers would take Iron for second quarter delivery, but sellers are not disposed to meet their views regarding prices for such delivery. Several sales of Low Phosphorus Iron have been reported, which reach a total of about 5000 tons. Some of this Iron for early shipment was sold at $20.50, delivered, while for forward delivery $20.50, at furnace, was in instances obtained. Prices on this grade are now much stronger, and it is not believed that $21, delivered, could be bettered. Some fairly good sales of Foundry Iron have been made, the most important being one of some 10,000 tons of Pipe Iron, for nearby delivery. This was understood to include both Northern and Southern low grade Iron, the former being sold at about $16, delivered. Standard Foundry grades have been fairly active, but no very large quantities were sold. Reported sales include lots ranging from 100 up to 1000 tons, with an occasional large lot at prices ranging from $17 to $17.25, delivered, for No. 2 X. Sellers are now pretty firmly maintaining prices on these grades, and the tendency appears to be upward, some few sellers now holding at $17.50, delivered, for No. 2 X Foundry. Virginia Irons are stronger, and while some sellers are out of the market, others have been booking quite fair tonnages, principally No. 2 Plain Iron, at $17, delivered, and are now holding at $17.25 to $17.50, for No. 2 X, delivered in buyers' yards. Southern Foundry Iron appears to be very firm. For delivery extending into the first quarter of next year, $13, Birmingham, for No. 2, appears to be bottom, and some sellers have even higher ideas of prices for such delivery. There has been a more active demand for Forge Iron; sales of 2000 and 1500 ton lots, at $15.75, delivered, an advance of 25c. a ton over recent sales, have been reported, and there is still considerable scattered inquiry before the trade. Generally speaking, buyers seem more anxious to get into the market, not only to cover for their near future requirements, but in some cases are anticipating their needs on the strength of the generally bettered conditions of business, but sellers are not disposed to take forward business at ruling quotations, and in instances refuse absolutely to quote for anything beyond the first quarter of next year. Melters are reported to be taking deliveries of Iron on contracts pretty freely, and there has no doubt been a considerable increase in the melt, particularly in the Steel making Irons. The situation is very strong. Inquiries still continue numerous on all grades, and the aggregate tonnage sold in this territory has been larger than any for a considerable time. Prices on practically all standard grades show a disposition toward the higher range of quotations, although some Iron is still available at the inside figures. The range for delivery in buyers' yards, eastern Pennsylvania and nearby territory, is about as follows, for shipments extending over the balance of this and through the first quarter of next year:

Eastern Pennsylvania, No. 2 X Foundry	$17.00 to $17.50
Eastern Pennsylvania, No. 2 Plain	16.50 to 17.00
Virginia, No. 2 X Foundry	17.00 to 17.50
Virginia, No. 2 Plain	16.75 to 17.00
Gray Forge	15.75
Basic	16.25 to 16.50
Low Phosphorus	21.00 to 21.50

Ferromanganese.—There has been more inquiry both for prompt and forward deliveries. The most important transaction was for 1000 tons for early delivery at somewhat less than $44, seaboard. Several small lots have also been sold, prices for which range about $1 higher. There is still considerable variation in quotations, which range from $45 to $47, Baltimore, for deliveries in the early portion of next year, although some sellers appear willing to shade these figures for desirable tonnages.

Plates.—There has been a material improvement in the demand for Steel Plates. Some mills report a normal volume of new business the past week and have doubled their recent productive capacity. Consumers show more disposition to contract for future requirements, and an increasing volume of business of this character has been taken. Individual tonnages have not been heavy, but a good demand for boiler, locomotive, bridge and boat Steel is reported. Prices are firmly maintained and range as follows for delivery in this territory:

	Carloads. Cents.	Parts carload. Cents.
Tank, Bridge and Boat Steel	1.75	1.80
Flange or Boiler Steel	1.85	1.95
Commercial Firebox	1.95	2.00
Marine	2.15	2.20
Locomotive Firebox Steel	2.25	2.30

The above are base prices for ¼-in. and heavier. The following extras apply:

	Extra per 100 lb.
3-16-in. thick	$0.10
Nos. 7 and 8, B. W. G.	.15
No. 9, B. W. G.	.25
Plates over 100 to 110 in.	.05
Plates over 110 to 115 in.	.10
Plates over 115 to 120 in.	.15
Plates over 120 to 125 in.	.25
Plates over 125 to 130 in.	.50
Plates over 130 in.	1.00

Steel Billets.—Inquiries are heavier, particularly regarding contracts covering the first half as well as the whole of next year, but sellers are not inclined to consider them seriously, especially for any time beyond the first half. As it is little new busines has developed, and orders taken are mainly small and for prompt shipment. Quotations continue unchanged. For delivery in this territory ordinary Rolling Steel commands $26.20; Forging Steel, $28.20, subject to the usual extras for high carbons and special sizes.

Structural Material.—An increased demand for Structural Shapes is noted and some heavy contracts for car work have been placed with Eastern mills, the Bethlehem Steel Company reporting orders for 15,000 tons of special car Shapes in the past two weeks. There has also been a fair volume of small bridge and building work, but large propositions in this direction develop slowly. The outlook, however, is considered much more favorable. Prices are firm and unchanged, and for delivery in this territory 1.75c. to 1.90c., according to specifications, is named.

Sheets.—A very fair week to week business continues, but there has been no placing of large orders nor disposition shown by buyers to anticipate their requirements for any lengthy period. Mills continue to run at about full capacity but have little bookings ahead. Quotations remain as recently named, ranging as follows for mill shipments, a tenth extra being added for small lots: Nos. 18 to 20, 2.50c.;

Nos. 22 to 24, 2.60c.; Nos. 25 to 26, 2.70c.; No. 27, 2.80c.; No. 28, 2.90c.

Bars.—A somewhat greater volume of business is before the trade, but makers are not inclined to take large orders at ruling prices. Pig Iron shows an advance in price, while Old Material has again been marked up, and is scarce at that. This has resulted in the withdrawal of some of the low prices which have recently prevailed, and Refined Iron Bars are now quoted for delivery in this territory at 1.47c. to 1.55c., with some sellers quoting 1.60c. Steel Bars are quoted at 1.55c., with Rerolled Bars at 1.50c., delivered in this vicinity, but there has been little business transacted.

Coke.—The market shows more strength, and while some buyers would contract for future needs at recent quotations, producers are not willing to take the business, and some have practically withdrawn from the market. There has been some transactions in Foundry Coke, but Furnace Coke is rather quiet. Prices are decidedly firmer, and in some cases advances are to be noted. Foundry Coke for delivery extending into the first quarter of next year is quoted at $2.25 to $2.50, at oven, with Furnace Coke $1.65 to $2, at oven, dependent on quantity and delivery. For delivery in this territory the following range of prices about represents the market:

Connellsville Furnace Coke	$3.75 to $4.00
Foundry Coke	4.25 to 4.50
Mountain Furnace Coke	3.35 to 3.60
Foundry Coke	3.85 to 4.10

Old Material.—The market is decidedly stronger, and sharp advances are to be noted in almost every grade. Sales, however, have been light. Buyers are willing, as a rule, to take tonnage, but sellers refuse to sell any considerable quantity even at an advance. The bulk of the business transacted has been in lots ranging from carloads to a few hundred tons, most of which has been done at advances over last week's quotations. For prompt delivery in buyers' yards, eastern Pennsylvania and nearby points, prices, while to some extent nominal, range about as follows:

No. 1 Steel Scrap and Crops	$16.00 to $16.50
Low Phosphorus	18.75 to 19.25
Old Steel Axles	21.75 to 22.25
Old Iron Axles	23.50 to 24.00
Old Iron Rails	20.50 to 21.00
Old Car Wheels	16.00 to 16.50
Choice No. 1 R. R. Wrought	19.50 to 20.00
Machinery Cast	15.25 to 15.75
Railroad Malleable	15.00 to 15.50
Wrought Iron Pipe	15.00 to 15.50
New Bundled Sheets	14.00 to 14.50
No. 1 Forge Fire Scrap	13.00 to 13.50
No. 2 Light Iron	10.00 to 10.50
Wrought Turnings	13.25 to 13.75
Stove Plate	13.00 to 13.50
Cast Borings	12.25 to 12.75
Grate Bars	14.25 to 14.75

Cleveland.

CLEVELAND, OHIO, November 17, 1908.

Iron Ore.—Sales aggregating about 40,000 tons, largely Bessemer, were made by one merchant firm the past week. The purchasers were furnace interests that bought Ore earlier in the season but thought that the improvement in the business outlook warranted them in taking on a little more. This perhaps winds up the buying for this season. With weather conditions good for this season of the year, the movement of Ore down the lakes kept up well the first half of November, and it is estimated that the shipments in the first two weeks reached 2,000,000 tons. The cold weather that started in this week, however, has made the handling of Ore difficult owing to its being frozen, and very little will be shipped after this week. The Steel Corporation has notified managers of outside vessels that it would make no more shipments in their boats, and consequently many freighters are being laid up this week. The Corporation will continue to operate some of its own boats till about the end of the mouth. Merchant Ore firms that operate their own boats will keep them running till about the close of navigation, but those that use outside boats will have their shipments about cleaned up at the end of this week. Prices at Lake Erie docks, per gross ton, are as follows: Old Range Bessemer, $4.50; Mesaba Bessemer, $4.25; Old Range Non-Bessemer, $3.70; Mesaba Non-Bessemer, $3.50.

Pig Iron.—A good buying movement in Foundry Iron has kept up the past week, although not quite so heavy. The market is firm, and an advance of 50c. to 75c. a ton has been made by local furnaces, a similar advance being noted in the Valley. Valley furnace interests are now holding pretty firmly to $16 for No. 2 Foundry for first quarter and first half delivery. In the local market no lower price is accepted for outside shipment, and about $16.50, at furnace, seems to be the minimum price for local delivery for the first half, some tonnage having been sold at that price. Local furnaces are well sold up for the first quarter, and one interest has advanced its price for the first half to $16.90 for No. 2, delivered, Cleveland, and to $16.50 for outside shipment, the latter price being regarded as prohibitive for the present in competition with Valley furnaces. The same price is being quoted by this interest for Iron for delivery the balance of the year. Sales aggregating about 25,000 tons for the first half and quarter were made by one local furnace interest during the week, and the local selling agency of a Valley furnace reports sales of about 10,000 tons. Sales aggregating about 8000 tons, mostly Foundry Iron, were made from Toledo furnaces during the week, the price being advanced for shipment from that point to about $16, at furnace. The tonnage sold by local interests at Cleveland and Valley furnaces was on the basis of $15 to $15.50 and $16, at furnace, for No. 2, some of the late sales being at the highest price. Founders that have already bought have covered for the first half on about the basis of their present requirements, which are regarded at about 60 to 75 per cent. of the normal melt. A slight increase is noticed in the melt, and if conditions continue to improve as expected in the next few months the consumers who have bought the past three weeks will have to come in the market for more Iron before the end of the first half. Quite a number of consumers who failed to get in the market when lower prices were prevailing now have inquiries out, but some of them are holding off, being unwilling to pay the present prices. Among the inquiries pending are one for 1000 tons of Foundry Iron from a local Foundry and several for 500-ton and smaller lots. A local interest reports large inquiries for Foundry Iron for shipment to Eastern points and Pittsburgh territory, some of the largest consumers being in the market. There is a good demand for Basic Iron. One local interest has received inquiries the past few days aggregating 36,000 tons, but is refusing to quote a price under $16. Valley furnace, and that for only small lots. Among the inquiries is one from St. Louis for 3000 tons. There is little inquiry for Malleable Iron. For the balance of the year, we quote, delivered, Cleveland, as follows:

Bessemer	$16.40 to $16.90
Northern Foundry, No. 1	16.75 to 17.25
Northern Foundry, No. 2	16.25 to 16.75
Northern Foundry, No. 3	15.75 to 16.25
Gray Forge	15.00 to 15.50
Southern Foundry, No. 2	17.35
Jackson County Silvery, 8 per cent. Silicon	20.05

Coke.—The market is more active, and very firm. Some founders that have bought their Pig Iron for the first half have now turned their attention to Coke for that delivery, and a number of contracts have been closed. We quote Standard Connellsville Furnace Coke at $1.90 to $2, at oven, for the first half, and Connellsville 72-hr. Foundry Coke at $2.35 to $2.50, at oven, for first half delivery, and $2.25, at oven, for balance of the year.

Finished Iron and Steel.—A fair improvement has been made in specifications. The demand is by far the best for Bar products, about 75 per cent. of the orders being for that line of material. New business is still rather light, but the outlook is more favorable. An improvement in the lake shipbuilding industry is noticed in the placing during the week of orders for three lake boats that will be built by the Great Lake Engineering Works of Detroit. The Mutual Transit Company, Buffalo, contracted for two 350-ft. package freighters, and W. P. Snyder, Pittsburgh, ordered a 600-ft. freighter. These boats will be built in time for the opening of navigation next year, and will require in the neighborhood of 8000 tons of Plates and Structural Shapes. It is announced that the freighter ordered several weeks ago by the La Belle Iron Works, Steubenville, will be built at the Cleveland yard of the American Shipbuilding Company. The contract for a portion of the material for this boat was placed some time ago, the remainder being furnished by the La Belle plant. Considerable improvement is noticed in the demand for Rails. One inquiry is pending for 10,000 tons of Standard Sections, and another for 2080 tons of Standard Sections for a new Ohio steam railroad. The Wheeling & Lake Erie Railroad has revived an old order for 1650 tons of Standard Sections, having placed specifications for 500 tons, and promising an order for the balance in a short time. The demand for Iron Bars is still light, and mills are refusing to take orders at present prices except for immediate delivery, claiming that there is no profit at present prices, with Scrap as high as it is at present. Some contracts were closed for Boiler Tubes and Sheets, prices on which are slightly firmer. Among the specifications of the week was an order from a local jobber for over 1000 tons of Bars. There is some improvement in the demand for Structural Material in small lots, some specifications that were held up until after election now being placed. The Board of Public Service, Columbus, Ohio, will receive bids December 16 for the Steel superstructure of a viaduct that will require about 300 tons of material. Jobbers report a slight improvement in warehouse orders. We quote Iron Bars, 1.45c., Cleveland, for car lots; Steel Bars, 1.50c., Cleveland, for car lots, half extras; Beams and Channels, 1.70c., Cleveland, and Plates, ¼-in. and heavier, 1.70c., Cleveland. We quote Sheets, mill shipments, car lots, Cleveland, as follows: Blue Annealed, No. 10 1.90c.; Box Annealed, No. 28, 2.60c.; Galvanized, No. 28, 3.65c. Jobbers quote Iron and Steel Bars out of stock at 1.65c. to 1.70c. Beams and Channels from warehouse are 2c., and Plates, ¼-in. and heavier, 1.90c. Warehouse prices on Sheets

are as follows: Blue Annealed, No. 10, 2.10c.; Box Annealed, No. 28, 2.70c.; Galvanized, No. 28, 3.80c. Warehouse prices on Boiler Tubes, 2¾ to 5 in., are 65 per cent. discount, and on Black Merchant Iron Pipe, base sizes, 71 per cent. discount.

Old Material.—The market is firmer, an advance of 50c. a ton being noted in nearly all grades of Scrap. Inquiries are quite plentiful, but actual sales are few for the reason that dealers and consumers cannot get together on prices. There is an improved demand for all grades, except possibly Cast Scrap. Out of town inquiries are largely for Borings and Turnings. There is also more inquiry for Old Car Wheels. There was some covering during the week by dealers who sold short. Producers as well as dealers are holding out for higher prices. Local mills are offering $15 for Heavy Melting Steel, which dealers refuse to accept. The Lake Shore Railroad has a list out this week of about 5000 tons, included in which are 3000 tons of Old Rails. Dealers' prices to the trade, per gross ton, f.o.b. Cleveland, are as follows:

Old Steel Rails	$14.50 to $15.00
Old Iron Rails	17.50 to 18.00
Steel Car Axles	19.00 to 19.50
Old Car Wheels	15.00 to 15.50
Heavy Melting Steel	14.50 to 15.00
Relaying Rails, 50 lb. and over	22.00 to 23.00
Railroad Malleable	13.75 to 14.25
Agricultural Malleable	12.50 to 13.00
Light Bundled Sheet Scrap	9.50 to 10.00

The following prices are per net ton, f.o.b. Cleveland:

Iron Car Axles	$20.00 to $20.50
Cast Borings	7.50 to 8.00
Iron and Steel Turnings and Drillings	8.50 to 9.00
Steel Axle Turnings	9.00 to 9.50
No. 1 Busheling	12.00 to 12.50
No. 1 Railroad Wrought	14.00 to 14.50
No. 1 Cast	12.50 to 13.00
Stove Plate	11.25 to 11.75
Bundled Tin Scrap	9.00

Pittsburgh.

PARK BUILDING, November 18, 1908.—(*By Telegraph.*)

Pig Iron.—Inquiries have been less active, but the furnaces and large dealers are very firm in their ideas as to prices. The Westinghouse Electric & Mfg. Company, which just before the election bought a fair quantity of Iron for first quarter, is now in the market for 3000 tons of Nos. 1, 2 and 3 Foundry for second half. Furnaces quote $15.50, at furnace, on Basic for prompt shipment, and $16 for first quarter and first half delivery, and we understand some has been sold at $16, at furnace, for first half. Bessemer is held at about $16, at furnace, for first quarter, and while inquiries are not heavy, the available supply is limited. No. 2 Foundry is generally quoted at $16, Valley furnace, for first quarter, but this might be slightly shaded on a firm offer for prompt delivery. Forge Iron is higher, and is now held at about $14.25, Valley furnace, or $15.15, Pittsburgh. The Pittsburgh Steel Company is reported to have taken the entire output of Basic of a local furnace through first quarter of next year, and this furnace is now out of the market. We note sales of 200 tons of Bessemer, sulphur guaranteed 0.15 or under, to the Crucible Steel Company at $18, at furnace; 500 tons of Basic for first quarter at $15.50, and 500 tons for second quarter, at $16, Valley furnace; 500 tons of Forge at $14, Valley furnace, and about 2000 tons of Forge at prices ranging from $13.60 to $14, and higher.

Steel.—We note a sale of 2000 tons of small and large Billets at regular prices for December, January and February delivery. Consumers of Bessemer Billets, Forging Billets and Sheet and Tin Bars are taking out more on their contracts than they have for some time, and the whole Steel market is more active. We quote Bessemer and Open Hearth Billets, 3⅞ in. and larger, up to and including 0.25 carbon, $25; 0.26 to 0.60 carbon, $1 extra; over 0.60 carbon, $2 extra, all f.o.b. Pittsburgh. For Wheeling, Martins Ferry, Follansbee, Newcastle, Sharon, Steubenville and Washington (Pa.) delivery, half the freight, or 50c. additional, is charged. Sheet and Tin Bars in random lengths are $27.50, f.o.b. Pittsburgh. Forging Billets take $2 advance over Rolling Billets.

Railroad Spikes.—A number of the leading railroads are now in the market trying to cover on their entire requirements of Spikes for all of next year's delivery, these inquiries aggregating upward of 50,000 kegs. Makers are refusing to sell for delivery beyond first quarter. Railroad Spikes are firmly held at $1.70 per keg, at mill.

Steel Cars.—The United States Steel Corporation is in the market for about 3000 all Steel cars, of which 1800 are to be used on its railroads in the Ore regions, and the other 1200 on its Union Railroad and other roads at various plants.

(*By Mail.*)

Following the heavy advances in prices of Pig Iron immediately after the election, the demand has quieted down. One leading consumer of Billets has practically covered his requirements on both large and small Billets through next year, the tonnage being divided between three or four mills and prices guaranteed against decline. In Finished Iron and Steel the past week was not so active, but the general feeling in the whole trade is more optimistic than it has been for some months. The belief is strong that the turn in the Steel trade has come and that we will have a gradual improvement, and that by next April or May normal conditions will again prevail and the mills be able to run to about full capacity.

Ferromanganese.—As noted last week, prices on Ferro are decidedly firmer, and we now quote 80 per cent. foreign at $44.50 to $45, seaboard, for forward delivery, with some sellers asking higher prices. The demand has picked up considerably in the last two weeks. One sale of 150 tons of Ferro is reported at about $44.50, seaboard, plus the freight of $1.90 to Pittsburgh.

Ferrosilicon.—A leading consumer is in the market for a round tonnage of Ferrosilicon, but as yet it has not been closed. Prices are firmer, and we quote 50 per cent. at $64 to $64.50, Pittsburgh, for prompt shipment. For delivery in first quarter and first half of next year higher prices are quoted.

Wire Rods.—Some inquiry for Rods has developed and several lots have been placed, a reported contract involving 1500 to 2000 tons running into first quarter of next year. The market is firm, and we continue to quote Bessemer Rods at $33, Chain Rods $33 and Basic Rods $34, Pittsburgh.

Muck Bar.—A local consumer of Muck Bar has recently contracted for a large tonnage with a Mahoning Valley mill, deliveries running through first half of next year. The market on Muck Bar is decidedly firmer, owing largely to the higher prices asked for Forge Iron, and we now quote best grades at $26, Pittsburgh, with some sellers asking higher prices.

Skelp.—There is more inquiry than for some time, and the Pipe mills are specifying more freely for Plates against old contracts. Prices are also firmer, and we quote: Grooved Steel Skelp, 1.45c. to 1.50c.; Sheared Steel Skelp, 1.50c. to 1.60c.; Grooved Iron Skelp, 1.60c. to 1.70c., and Sheared Iron Skelp, 1.70c. to 1.75c., f.o.b. Pittsburgh.

Plates.—The Shenango Steamship Company, an identified interest of W. P. Snyder & Co., Pittsburgh, has placed an order with the Great Lakes Engineering Works, Detroit, for a 605-ft. Ore boat. This will be the largest Ore boat on the lakes, and the Plates and Shapes, about 7200 tons, will be furnished by the Jones & Laughlin Steel Company. The Carnegie Steel Company is rolling heavy orders for the National Tube Company and the American Bridge Company, and its Plate mills are operating to about 60 per cent. of capacity, which is about the same rate at which the outside mills are running. Prices on Plates are reported firmer, but some shading is still being done on the narrow sizes, not exceeding $1 to $2 a ton. Regular prices on Plates are as follows: Tank Plates, ¾ in. thick, 6¼ in., up to 100 in. wide, 1.60c., base, at mill, Pittsburgh. Extras over this price are as follows:

Tank, Ship and Bridge quality, ¼-in. thick on edges, 100 in. wide, down to but not including 6 in. wide, is taken as base.

Steel Plates up to 72 in. wide, inclusive, ordered 10.2 lb. per square foot, shall be considered ¼-in. Plate. Steel Plates over 72 in. wide must be ordered ¼-in. thick on edge, or not less than 11 lb. per square foot, to take base price. Steel Plates over 72 in. wide ordered less than 11 in. per square foot down to the weight of 3-16-in. shall take the place of 3-16-in.

Percentages as to overweight on Plates, whether ordered to gauge or weight, to be governed by the Association of American Steel Manufacturers' Standard Specifications.

Gauges under ¼-in. to and including 3-16-in. Plates on thin edges	$0.10
Gauges under 3-16-in. to and including No. 8	.15
Gauges under No. 8 to and including No. 9	.25
All sketches (excepting straight taper Plates varying not more than 4 in. in width at ends, narrowest end being not less than 30 in.)	.10
Complete Circles	.20
Boiler and Flange Steel Plates	.10
"A. B. M. A." and ordinary Firebox Steel Plates	.20
Still Bottom Steel	.30
Marine Steel	.40
Locomotive Firebox Steel	.50
Shell grade of Steel is abandoned.	
For widths over 100 in. up to 110 in.	.05
For widths over 110 in. up to 115 in.	.10
For widths over 115 in. up to 120 in.	.15
For widths over 120 in. up to 125 in.	.25
For widths over 125 in. up to 130 in.	.50
For widths over 130 in.	1.00

TERMS.—Net cash 30 days. Pacific Coast base, 1.50c., f.o.b. Pittsburgh.

Steel Rails.—As yet none of the leading railroads has come in the market for Rails for next year's delivery, but it is believed that some business will be placed before the end of December. The Carnegie Steel Company has received specifications for 1000 tons for a Southern road, and booked an order for 3000 tons of 70 lb. Rails for an eastern Ohio traction line. It has also sold 1200 to 1500 tons of Light Rails. No. 1 mill at the Edgar Thomson plant, on which the heavier sections are rolled, is in operation, but Nos. 2 and 3 mills are down this week, but may start next Sunday night. Makers of Light Rails rerolled from Old Rails continue to sell at $2 to $3 a ton under Rails rolled from Billets. Prices on new Light Rails, rolled from Billets, are as follows: $25 for 25 to 45 lb. Sections, with $1 advance for 20 lb., $2 advance for 16 lb., and $3 advance for

12 lb. Standard Sections are $28, at mill, and Angle Splice Bars, 1.65c., at mill.

Structural Material.—Inquiries are much better and the feeling in the Structural trade is more optimistic than for some time. The American Bridge Company has taken a contract for 96 duplicate spans for a railroad bridge in the Philippines and has also taken 5000 tons for an apartment building in New York City. Other contracts have been placed involving close to 10,000 tons of Structural Steel, and the shops have more actual work on their books than for some time. We quote, f.o.b. mill, Pittsburgh: I-Beams and Channels, 3 to 15 in., inclusive, 1.60c., net; I-Beams over 15 in., 1.70c., net; H-Beams over 8 in., 1.80c.; Angles, 3 to 6 in., inclusive, ¼ in. and up, 1.60c., net; Angles, over 6 in., 1.70c., net; Angles, 3 x 3 in. and up, less than ¼ in., 1.50c., base, half extras, Steel Bar card; Tees, 3 in. and up, 1.65c., net; Zees, 3 in. and up, 1.60c., net; Angles, Channels and Tees under 3 in., 1.50c., base, half extras, Steel Bar card; Deck Beams and Bulb Angles, 1.90c., net; Hand Rail Tees, 3c., net; Checkered and Corrugated Plates, 3c., net.

Sheets.—A meeting of the independent Sheet and Tin Plate mills was held in this city last week, which was very fully attended, only two or three of the smaller mills not being represented. James A. Campbell, president of the Youngstown Sheet & Tube Company, presided. The sentiment of all the mills represented was in favor of maintaining absolutely the regular prices. The demand for Sheets is showiug some betterment, and the mills have more actual orders on their books than for some time. Concessions in prices have almost entirely disappeared. For shipment from mill prices are as follows: Blue Annealed Sheets, No. 10 and heavier, 1.80c.; Nos. 11 and 12, 1.85c.; Nos. 13 and 14, 1.90c.; Nos. 15 and 16, 2c.; Box Annealed, Nos. 17 to 21, 2.25c.; Nos. 22 to 24, 2.30c.; Nos. 25 and 26, 2.35c.; No. 27, 2.40c.; No. 28, 2.50c.; No. 29, 2.60c.; No. 30, 2.70c. Galvanized Sheets, Nos. 10 and 11, 2.45c.; Nos. 12 and 14, 2.55c.; Nos. 15 and 16, 2.65c.; Nos. 17 to 21, 2.80c.; Nos. 22 and 24, 2.95c.; Nos. 25 and 26, 3.15c.; No. 27, 3.35c.; No. 28, 3.55c.; No. 29, 3.70c.; No. 30, 3.95c.; No. 28, Painted Roofing Sheets, $1.75 per square, and Galvanized Roofing Sheets, No. 28, $3.10 per square, for 2½-in. corrugations. These prices are subject to a rebate of 5c. per 100 lb. to the large trade under the usual conditions, jobbers charging the usual advances for small lots from store.

Tin Plate.—Some additional orders for Bright Plate for the salmon packing interests have been placed for delivery prior to April 1. The Pope Tin Plate Company, the largest independent interest, is now operating its plant, containing 12 hot mills, full time, and has booked some good sized orders. The American Sheet & Tin Plate Company is now operating very close to 50 per cent. of capacity. Prices on Tin Plate, we are advised, are being absolutely maintained. We quote prices on Tin Plate, as follows: $3.70 for 100 lb. Cokes, 14 x 20, f.o.b. Pittsburgh, terms 30 days, less 2 per cent. off for cash in 10 days, this price being subject to the usual rebate of 5c. per base box in large lots.

Hoops and Bands.—Contracts placed early in the year have been pretty well cleaned up, and it is expected that within a short time the mills will name prices for next year's delivery. It is said that regular prices are being maintained as follows: Steel Hoops, 1.80c., base, full Hoop card prices; Steel Bands, 1.40c., base, half Steel card extra, all f.o.b. cars, Pittsburgh, in carload lots, for delivery during 1908.

Iron and Steel Bars.—Specifications against contracts for Steel Bars continue to come in freely. A favorable feature of the situation is that makers of railroad equipment are now more liberal buyers of Bars than for some time. The implement makers who placed heavy contracts last May and June are also specifying liberally, and the leading manufacturers of Steel Bars are now able to run to fuller capacity than at any time in the past year. The demand for Iron Bars is also reported to be picking up, a good many orders being placed for car repair work. The situation in both Iron and Steel Bars is more favorable than it has been for some months. Prices are firm. We quote Iron Bars at 1.40c., base, for Pittsburgh delivery, and 1.35c., base, for Western points, to which freight is added, except Chicago, the price for which is 1.50c., delivered. We quote Steel Bars at 1.40c., Pittsburgh, for base sizes.

Railroad Spikes.—Some fair sized orders are being placed, but as yet the railroads are not heavy buyers. The demand for the smaller sizes continues quite active, and keeps the mills fully employed. Prices are firm, and we quote: Standard sizes, 4½ x 9-16 in., at $1.70, and the smaller sizes at $1.80 per 100 lb. in carload and larger lots, with an advance of 5c. per 100 lb. for less than carload, f.o.b. Pittsburgh.

Merchant Steel.—The large trade is buying more freely and the railroads are also placing more orders for Spring Steel, so that this trade is more active than for some time. Specifications from the implement makers are coming in at a fairly satisfactory rate. On large contracts for Shafting regular discounts are being shaded. Regular prices on Cold Rolled Shafting are 57 per cent. off in carloads and 52 per cent. on less than carloads, delivered in base territory. Prices on Merchant Steel are being shaded, regular quotations being as follows: Smooth Finished Machinery Steel, 1.80c. to 1.90c.; Flat Sleigh Shoe, 1.75c. to 1.85c.; Cutter Shoe Steel, 2.15c. to 2.25c.; Toe Calk, 1.90c. to 1.95c.; Railroad Spring Steel, 1.60c. to 1.75c., the higher prices being for Pennsylvania Railroad analysis. Carriage Spring Steel is 1.80c.; Tire Steel, Iron finish, 1½ x ½ in. and heavier, 1.40c.; under 1½ in., 1.55c. Planished Tire Steel is 1.60c., all f.o.b., at mill.

Spelter.—The market has shown a sharp advance, and we now quote prime grades of Western Spelter at 4.95c. to 5c., East St. Louis, equal to 5.07½c. and 5.12½c., Pittsburgh. The demand is more active than for some time and still higher prices are predicted.

Merchant Pipe.—This and next month are usually the dullest months of the year in the Pipe trade, but so far this month actual orders placed with the mills are about as heavy as in the same period in October. The large trade is buying more freely, believing that present prices on Pipe will not be reduced. Indications are that there will be an enormous demand next year for Line Pipe from the gas and oil companies, as a number of important projects are certain to be put through if money conditions continue favorable. The mills are firmly holding prices on both Iron and Steel Pipe, but occasionally jobbers shade prices to some extent. Discounts on Steel Pipe, ¾ to 6 in., to the large trade, are 76 and 5 per cent. off list. Regular discounts are as follows:

Merchant Pipe.

	Jobbers, carloads, Steel. Black. %	Galv. %
⅛ to ¼ in	67	51
⅜ in	69	55
½ in	71	59
¾ to 6 in	75	65
7 to 12 in	72	57
Extra strong, plain ends:		
⅛ to ⅜ in	60	48
½ to 4 in	67	55
4½ to 8 in	63	51
Double extra strong, plain ends:		
½ to 8 in	56	45

Discounts on Genuine Iron Pipe are as follows:

	Black. %	Galv. %
⅛ to ¼ in	65	..
⅜ in	67	53
½ in	69	57
¾ to 6 in	73	63
7 to 12 in	70	55
Extra strong, plain ends:		
⅛ to ⅜ in	58	46
½ to 4 in	65	53
4½ to 8 in	61	49
Double extra strong, plain ends:		
½ to 8 in	54	43

Boiler Tubes.—More orders from the railroads for Boiler Tubes are being placed than for some time. The mills also report an increased demand for Merchant Tubes. The statement is made that the prices on Tubes is also firmer, the cutting in prices which has prevailed for so long having largely disappeared. For Merchant Tubes in small lots, on which an extra 5 per cent. is allowed in carloads, discounts are as follows:

Boiler Tubes.

	Iron.	Steel.
1 to 1½ in	42	47
1¾ to 2¼ in	42	59
2½ in	47	61
2¾ to 5 in	52	65
6 to 13 in	42	59

2½ in. and smaller, over 18 ft. long, 10 per cent. net extra.
2¾ in. and larger, over 22 ft. long, 10 per cent. net extra.

Iron and Steel Scrap.—While the demand for Scrap has quieted down in the past week, we can report the market as very firm, dealers having paid $16 and $16.25 for Heavy Steel Scrap to fill their own contracts. Large consumers are pretty well covered and are placing no orders they can avoid, for the purpose of keeping the market from going still higher. Dealers quote about as follows: Heavy Steel Scrap, $16 to $16.25; Cast Iron Borings, $10.50 to $10.75; Bundled Sheet Scrap, $12.50 to $13; No. 1 Busheling Scrap, $14.25 to $14.50; No. 2, $10.75 to $11; No. 1 Railroad Wrought Scrap, $16.75 to $17; No. 1 Cast, $14.50 to $14.75; Iron Axles, $22.50 to $23; Sheet Bar Crop Ends, $19.50 to $20; Low Phosphorus Melting Stock, $18.25 to $18.50; Rerolling Rails, $17.50 to $17.75, delivered at Cambridge, Ohio, or Cumberland, Md.; Steel Axles, $19.50 to $20; Grate Bars, $12.50 to $12.75; Old Car Wheels, $16 to $16.25; Machine Shop Turnings, $11 to $11.25; Railroad Malleable Scrap, $14.75 to $15; Iron Rails, $18.75 to $19; Locomotive Tires, $17.25 to $17.50. All above quotations are per gross ton, f.o.b. Pittsburgh, unless otherwise noted.

Coke.—We note quite an active demand for both Furnace and Foundry Coke for next year's delivery, and the general Coke market is very much better, both as regards demand and prices than it has been for some months. A good many blast furnaces have recently started, which have

not covered for their Coke. Strictly Connellsville Furnace Coke for prompt shipment is now held at $1.75 to $1.85 per net ton, at oven, and for delivery over next half of the year most makers of Connellsville Coke are asking $2, at oven. Connellsville 72-hr. Foundry Coke, for shipment over first half, is held at $2.25 to $2.50, at oven. Other grades of Furnace and Foundry Coke made outside the Connellsville region can be obtained at slightly lower prices. Out of 37,893 ovens in the Upper and Lower Connellsville regions, 18,570 were active last week, and 19,323 idle. The output was 230,559 tons, an increase over the previous week of nearly 7000 tons.

Spang, Chalfant & Co., Inc., Union Bank Building, Pittsburgh, operating the Etna Iron & Tube Works, Etna, Pa., have opened a branch office in room 1304 Third National Bank Building, St. Louis, in charge of J. D. Hardcastle, who has been in the sales department of the Pittsburgh office for some years.

Buffalo.

BUFFALO, N. Y., November 17, 1908.

Pig Iron.—The market is increasingly active, with a decided firming of prices throughout the list and slight advances in most grades. Sales since November 4 have far exceeded any similar period during the year. Most of the furnaces are now booked to capacity for balance of year, with considerable business placed for first quarter and half of 1909, shipments going forward from the furnaces at a greatly accelerated rate. We quote as follows, f.o.b. Buffalo:

No. 1 X Foundry	$16.00 to $16.50
No. 2 X Foundry	15.50 to 16.00
No. 2 Plain	15.25 to 15.75
No. 3 Foundry	15.00 to 15.50
Gray Forge	14.75 to 15.25
Basic	15.50 to 16.00
Malleable Bessemer	16.00 to 17.00
Charcoal	20.00 to 20.50

Old Material.—There is a strong upward tendency and a considerable increase in the volume of transactions, notwithstanding a sharp advance in prices for most lines. Indications point to a continued increase in demand from consumers and a stronger market. We quote dealers' asking prices, per gross ton, f.o.b. Buffalo:

Heavy Melting Steel Scrap	$16.00 to $16.50
No. 1 Railroad Wrought	17.50 to 18.50
No. 1 Railroad and Machinery Cast Scrap	15.00 to 16.00
Old Steel Axles	19.00 to 20.00
Old Iron Axles	23.00 to 24.00
Old Car Wheels	17.00 to 18.00
Railroad Malleable	14.50 to 15.00
Boiler Plate	13.00 to 13.50
Locomotive Grate Bars	12.50 to 13.00
Pipe	12.50 to 13.00
Wrought Iron and Soft Steel Turnings	9.50 to 9.75
Clean Cast Iron Borings	8.50 to 8.75
No. 1 Busheling Scrap	14.50 to 15.00

Finished Iron and Steel.—The week has shown a steady increase in the volume of orders placed for Bars, Billets and Structural Material. The Lackawanna Steel Company has this week started up two additional open hearth furnaces and one additional blast furnace to care for increased business, making seven of its 11 open hearth and five of its seven blast furnaces now in operation. Contracts for Structural Steel for the Arcade Building on the Chautauqua Assembly Grounds, about 150 tons, will be closed this week. Bids for Structural Steel for the Schenectady County Court House, Schenectady, opened last week, showed John Gill & Son, New York, to be low bidders. Contract has not yet been awarded.

In discussing the function of oxygen in the corrosion of iron, at the recent New York meeting of the American Electro-Chemical Society, Prof. W. H. Walker of Boston, said that internal protection of steam boilers could be provided by merely keeping out the oxygen ordinarily carried by feed water. This could be done by a preheater and a dry vacuum pump. Even an open heater will drive out most of the oxygen and relieve corrosion troubles. Other schemes propose passing the water over finely divided iron or the addition of alkaline sodium tannate.

The excess of merchandise exports over imports in October was $69,857,977, which compares with $68,340,675 in the same month last year and $69,224,996 in 1906. For the 10 months this excess amounted to $502,109,864, compared with $291,857,072 last year. If the comparison is run back to include November and December, 1907, an excess of exports is shown amounting to $710,509,177, which is unexampled for any 12 months' period on record.

Cincinnati.

CINCINNATI, OHIO, November 18, 1908.—(*By Telegraph.*)

A feature of the week in Iron and Steel circles has been the attitude of the furnaces in southern Ohio and in the Birmingham and Tennessee districts in withdrawing quotations and mystifying representatives as to prices and deliveries. In finished lines there is an increasingly better feeling, and the trade is satisfied that the close of the year will be all that could be desired. In the rapid advance of prices on Pig Iron good profits are accumulating in the treasury of at least two of the largest selling concerns in the country that were shrewd enough to buy on speculation quantities ranging from 10,000 to 35,000 tons, when Southern Iron was at the $10.50 and $10.75 figures for No. 2, at Birmingham. All local dealers in Scrap are advancing prices on the items most in demand, and announce they will go higher ere the year closes. The machine tool men are all planning to increase time and forces. The executive officers of the Cincinnati branch of the National Metal Trades Association are busy with details of the coming dinner, which, in contrast to the one of last year called "poverty dinner," will this year be denominated a "prosperity dinner." It is to be given at the Business Men's Club December 10. It is not improbable that some important State and national officials will be guests of honor. All the national officers are expected, and acceptances have already been received from tool and machinery manufacturers in St. Louis, Providence, Boston and New York.

Pig Iron.—There has been some heavy selling, much of it quietly, and it has been a week of firming up on prices by the Southern furnaces, some of the largest of which have just advised representatives here and elsewhere to withdraw all quotations until further notice. Southern Ohio Irons, too, have stiffened, and the lowest price heard to-day for Northern No. 2 is $15.50, Ironton, with most furnaces offering but a limited quantity for spot delivery at that price. The Sloss-Sheffield Company is asking $13, Birmingham, for No. 2 for first quarter, with a stated disinclination to book business beyond that at that price. It is difficult to get a price on Basic. The largest deal of the week in Basic in this territory was the reported purchase of something like 10,000 or 12,000 tons from a central Ohio furnace interest for delivery to local Steel makers covering the first half of the year, the price about $15.50, at furnace. Basic is reported scarce. A local concern would sell a little at $16, Cleveland. Another Longdale stack was blown in on Basic November 7. The Indiana melter who wanted 2000 tons of Malleable is reported to have secured it, but the price is not available. The Indiana agricultural implement interest that wanted 2000 tons of low grade Iron is reported to have bought 3000 tons at an attractive price. A local house was offered to-day $11.75, Birmingham, for Gray Forge, but $11.50 is freely quoted for prompt shipment. Bessemer is about $16.50 to $17, both at Valley and southern Ohio furnaces. The Republic Iron & Steel Company, which is now blowing all three furnaces at Thomas, Ala., is offering a standard Iron at $13, Birmingham, for first quarter shipment, but will not sell for second quarter alone at that price. Rockwood is reported out of the market. There is a wider range between grades of standard Southern Car Wheel. A central Ohio manufacturer of boilers wants 600 tons of No. 2 and 400 tons of No. 4 Southern Foundry for the second quarter. A southern Ohio manufacturer of special machinery wants 400 tons of Foundry Irons for early delivery. For delivery balance of the year and for the first quarter we quote, based on freight rates of $3.25 from Birmingham and $1.10 from the Hanging Rock District, f.o.b. Cincinnati, as follows:

Southern Coke, No. 1	$16.75 to $17.25
Southern Coke, No. 2	16.25 to 16.75
Southern Coke, No. 3	15.75 to 16.25
Southern Coke, No. 4	15.25 to 15.75
Southern Coke, No. 1 Soft	16.75 to 17.25
Southern Coke, No. 2 Soft	16.25 to 16.75
Southern Coke, Gray Forge	14.75 to 15.25
Southern Mottled	14.50 to 15.00
Ohio Silvery, 8 per cent. Silicon	19.60
Lake Superior Coke, No. 1	17.10 to 17.60
Lake Superior Coke, No. 2	16.60 to 17.10
Lake Superior Coke, No. 3	16.10 to 16.60
Standard Southern Car Wheel	22.25 to 23.25
Lake Superior Car Wheel	21.75 to 22.75

(*By Mail.*)

Coke.—A number of producers are so well sold up that they have withdrawn temporarily from the market, which has the tendency to stiffen current prices a bit. A heavy tonnage of Coke has been sold in this market the past week for shipment to Southern furnaces. Dealers are still able to quote $1.85 to $1.90 at oven on Pocahontas Furnace Coke, and $2 on Wise County. The price varies on the Connellsville product, some agencies holding firmly at $2 as a minimum, while others quoting as low as $1.85, with a maximum of $2 for deliveries extending into and as far as the second quarter, the top price, however, prevailing for extended deliveries. There is little change in Foundry Coke. Prices range from $2 to $2.50 at oven and covering all favorite grades.

Finished Iron and Steel.—All dealers report an improved tone to the market, and inquiries increasing on almost all lines. Mills are reported to be running on specifications only, and deliveries are, as a rule, quite prompt. The demand for Twisted Steel Bars for concrete construction work, which has been excellent here for several months, shows some signs of abatement with the approach of cold weather, but other items entering into building work all indicate increasing strength. The Licking Rolling Mills, whose product is practically all sold locally, is running on half time, making Iron Bars exclusively. Collections are better with all dealers and jobbers. Dealers are quoting to the trade, f.o.b. Cincinnati, as follows: Iron Bars, carload lots, 1.55c., base, with half extras, small lots from store, 1.85c., base, half extras; Steel Plates, carload lots, 1.75c., base, with half extras; small lots from store, 1.85c.; base, half extras; Base Angles, carload lots, 1.85c., base; small lots from store, 2.10c.; Beams, Channels and Structural Angles, 1.85c., base; small lots from store, 2.10c.; Plates, ¼-in. and heavier, carload lots, 1.85c.; small lots from store, 2c.; Blue Annealed Sheets, heavy, No. 16, carload lots, 2.15c.; small lots from store, 2.50c.; No. 14, carload lots, 2.05c.; small lots from store, 2.40c.; No. 10 and heavier, carload lots, 1.95c.; small lots from store, 2.20c.; No. 12, carload lots, 2c.; small lots from store, 2.30c.; Sheets (Light), Black, No. 28, carload lots, 2.65c.; Galvanized Sheets, No. 28, carload lots, 3.70c.; Steel Tire, 4-in. and heavier, carload lots, 1.95c.; Plates, 3-16 and No. 8, carload lots, 2c.; small lots from store, 2.20c.

Old Material.—All dealers report greatly improved conditions. Inquiries are better, and there have been some good sales of Melting Steel, Relayers and Car Wheels. Mills at some distance have been buying heavily of Melting Steel in this market, and considerable rolling mill Scrap has been bought by mills in Indiana. The largest dealers have advanced Relaying Rails $1 a ton, and some good sized shipments have gone into Texas in the vicinity of El Paso. Car Wheels are also stronger, showing $1 advance over last week's quotations. We quote dealers' prices to the trade, f.o.b. Cincinnati, as follows:

No. 1 R. R. Wrought, net ton	$12.75 to $13.75
Cast Borings, net ton	5.25 to 5.75
Heavy Melting Steel Scrap, gross ton	14.50 to 15.50
Steel Turnings, net ton	6.00 to 7.00
No. 1 Cast Scrap, net ton	12.50 to 13.50
Burnt Cast, net ton	9.00 to 10.00
Old Iron Axles, net ton	16.75 to 17.75
Old Iron Rails, gross ton	15.00 to 16.00
Old Steel Rails, short, gross ton	13.00 to 14.00
Old Steel Rails, long, gross ton	12.75 to 13.75
Relaying Rails, 56 lb and up, gross ton	21.50 to 22.50
Old Car Wheels, gross ton	14.00 to 15.00
Low Phosphorus Scrap, gross ton	14.00 to 15.00

Metal Market.

NEW YORK, November 18, 1908.

Pig Tin.—A steady demand by consumers has taken considerable tonnage, but business has not been large. The principal buying has been of futures, and in this line there has been a fair turn over. Some excitement was occasioned on Monday, when the announcement was made by the Dutch Government that the date of the Banca sale would be changed from November 27 to November 20, a week earlier. This was the occasion for hammering the market, and on that day the lowest price of the week was realized, namely, 30c. In the main, Tin is slightly easier than last week, the quotations being as follows:

	Cents.
November 11	30.62½ to 30.75
November 12	30.30
November 13	30.40
November 16	30.00
November 17	30.30
November 18	30.25

The arrivals have been large, aggregating 2474 tons, and there are afloat 1985 tons, of which at least 835 tons will make this month's delivery. This will give supplies of about 3500 tons in addition to the stocks held the first of the month of 1600 tons. The deliveries may be 3000 tons, so it is expected that stocks will increase. The shipments from the Straits will likewise be heavy, and are estimated at between 5500 and 6000 tons. The London market closes to-day at £136 17s. 6d. for spot and £138 15s. for futures. This is about £2 10s. below last week's price.

Copper.—Prices are lower than last week, and the heavy buying has subsided. Electrolytic for nearby delivery can be had at about 14.25c., while for January and February delivery 14.37½c. is asked. Lake is obtainable from second hands at 14.50c., and some producers have offered to sell November and December shipment at the same figure. The buying in October and November has been the largest in respect to tonnage in over two years. Consumers have enough metal for their needs for some time to come and producers, having disposed of the bulk of their nearby production, are not anxious to test the market. The course of the London market has been watched with great interest. The decline of about £2 last week from the high figure of £64 17s. 6d. for spot and £65 17s. 6d. for futures, has been largely recovered. The market there closed at £63 15s. for spot and £64 15s. for futures last night, but to-day is lower, at £63 2s. 6d. for spot and £64 2s. 6d. for futures. Abroad, consumers and dealers, the latter especially, continue to buy at the normal rate. No doubt exists that the position of Copper is somewhat better, but still production is in excess of consumption and is likely to continue so for several months. To-day the mines in this country are turning out Copper in excess of 40,000 gross tons a month, a rate never before equaled. Consumption is not over 16,000 to 18,000 tons, and even if exports continue above 20,000 tons, stocks are accumulating in this country, to say nothing of Europe, where in reporting warehouses alone in London they are 40,000 tons in excess of those held January 1, 1908. Manufacturers of Brass Tubes and Sheets have advanced their prices 1c. per pound. The exports so far this month are 11,018 tons. This year to date they are over 260,000 tons.

Pig Lead.—The market is very dull. Independent interests are quoting 4.40c. to 4.45c., New York, and 4.25c., St. Louis. The American Smelting & Refining Company continues to take orders on a basis of 4.30c. for shipment Lead in 50-ton lots. The foreign market is steady at £13 10s. 6d. The importation of Lead Ore has fallen off.

Spelter.—The market is dull and prices are practically unchanged at 5.05c. to 5.10c., New York, and 4.95c., St. Louis. There has been a sharp decline in the price of Ore in St. Louis, which has had an unfavorable effect.

Aluminum.—Prices of Aluminum are unchanged on a basis of 25c. for No. 1 Ingots, 33c. for Rods and Wire and 35c. for Sheets.

Antimony.—The broader market for this metal continues, but prices are practically unchanged from last week. There was a little flurry last week, but no business. Hallett's is held at 8.12½c. to 8.25c., Cookson's at 8.37½c. to 8.50c., and outside brands at 8c.

Nickel.—This metal is unchanged in price, 45c. being the ruling quotation for 10-ton lots and 50c. to 60c. for smaller quantities.

Tin Plate.—Prices continue without change at $3.89, New York, and $3.70, Pittsburgh, for 100-lb. IC Coke Plates.

Old Metals.—Business is slightly more active, and buyers are more willing to purchase at these figures than they were a week ago; in other words, they are getting used to a new set of values. Heavy Copper has been sold in the week at 13.75c. and 14c. These were choice lots, still were actual sales, and furnish a good gauge for the broadening market. Pure Copper Scrap is in relatively better demand than Brass Scrap. Dealers' selling prices are unchanged from last week, with the exception of Heavy Brass, which has been reduced one-quarter of a cent, as follows:

	Cents.
Copper, Heavy and Crucible	13.75 to 14.00
Copper, Heavy and Wire	13.50 to 13.75
Copper, Light and Bottoms	12.50 to 12.75
Brass, Heavy	9.50 to 9.75
Brass, Light	7.75 to 8.00
Heavy Machine Composition	12.75 to 13.25
Clean Brass Turnings	9.00 to 9.50
Composition Turnings	10.50 to 11.00
Lead, Heavy	4.25
Lead, Tea	4.00
Zinc, Scrap	3.50

New York.

NEW YORK, November 18, 1908.

Pig Iron.—Practically all the larger inquiries in the market last week have been closed, one interest buying an aggregate of 15,000 tons, another a total of 10,000 tons of Foundry Iron, both of them being connected with the railroad equipment industry. Several large transactions have also been made with New England founders, and there has been a good deal of buying on the part of the smaller works. The market is firm, with sellers maintaining a reserved attitude as to further commitments, at present prices, for delivery during the first and second quarters of next year. We quote, at tidewater, $17.50 to $17.75, for No. 1 Northern Foundry, $17 to $17.50 for No. 2 Foundry, and $16 to $16.50 for No. 2 Plain. Alabama Irons are quoted $17.50 to $17.75 for No. 1 Foundry, and $17.25 to $17.50 for No. 2 Foundry.

Steel Rails.—A few scattering lots are reported sold in the past week, including 500 tons for the Brooklyn Heights Railroad. Several of the heavy users of standard sections are getting together data as to their needs for next year, but there is no promise of immediate orders. By the first of the year, it is thought, a good many roads will be seeking April deliveries on a considerable tonnage.

Structural Material.—A lull has come in the placing of local business. About 7000 tons of work was figured on competitively by New York offices in the past week, but none of the projects on which bids went in in previous weeks was let. Bids have not yet been asked by the city on the new pier 53, North River, the Steel for which is variously

estimated at 2500 to 3500 tons. Bids will be opened November 25 for a bridge over the Monongahela River at Monongahela, Pa., to be built jointly by Allegheny and Washington counties, and calling for about 4000 tons. The Detroit-Edison Company's power house at Delray, below Detroit, Mich., 1500 tons, is reported to have been awarded. Dealers' stocks of plain material are generally light, and under the arrangements with the Steel manufacturers, which have been in force in the past six months, it is expected there will be no important accumulation of stocks in dealers' hands, so that any future advance that may come in Structural Shapes will not encounter any irregularity in prices to begin with. We quote at tidewater on shipments from mills as follows: Beams, Channels, Angles and Zees, 1.76c.; Tees, 1.81c. On Beams, 18 to 24 in., and Angles, over 6 in., the extra is 0.10c. Structural Material, cut to lengths, is sold in small lots at 2¼c.

Bars.—The improved demand for Bar Iron and the advancing prices of raw materials have caused the Bar Iron manufacturers to advance their prices. The leading makers are now quoting on the basis of 1.40c., Pittsburgh, or 1.56c., tidewater. It is expected that the smaller manufacturers, who have recently been following closely after the larger companies, will speedily get in line. They have been selling at 1.45c. to 1.50c. Steel Bars are quoted at 1.56c., tidewater.

Plates.—The demand in this locality is heavier for Universal than for Sheared Plates. Some good contracts have been placed for Universal Plates, deliveries in some cases running over six months. Orders for Sheared Plates are not so numerous as last week, when quite a rush was observed to make purchases by parties who had been waiting to see the result of the election. Inquiries for Sheared Plates are only for small quantities and are not numerous. Some export trade is being done. Prices are firmly held as follows, at tidewater, for standard sized Plates: Sheared Plates, 1.76c. to 1.86c.; Flange Plates, 1.86c. to 1.96c.; Marine Plates, 2.16c. to 2.26c.; Firebox Plates, 2.65c. to 3.50c., according to specifications.

Cast Iron Pipe.—The Board of Water Commissioners, Amsterdam, N. Y., is now advertising for bids to be opened November 24 on 3538 net tons of 30-in. and 3844 tons of 24-in., as well as about 100 tons of special castings. Some rush orders have been received on 6-in. Pipe for work necessary to be completed before the winter sets in. Some inquiries are also noted for spring delivery, but these are regarded as feelers rather than as indicating that orders may soon be placed. Carload lots of 6-in. are quoted at $24 per net ton, tidewater.

Old Material.—The market has suddenly become decidedly active. The monthly railroad offerings were easily disposed of, although it is estimated that the total quantity was about 150,000 tons. It is understood that consumers were overbid by dealers on much of this material. The fact that stocks are quite light in consumers' yards is shown by the numerous orders placed this week for large quantities. Dealers have found as little difficulty in disposing of 1000 to 5000 ton lots of all grades of Scrap as they had in selling carload lots two or three weeks ago. The sales have covered all kinds of material from Steel Scrap to Borings and Turnings. Prices have shown some advance, and if the buying movement continues a still higher level appears sure to be reached. Dealers are looking forward with confidence to much better prices by the turn of the year. Quotations are as follows, New York and vicinity, per gross ton:

Old Girder and T Rails for melting	$12.50 to $13.00
Heavy Melting Steel Scrap	12.50 to 13.00
Old Steel Rails, rerolling lengths	15.00 to 15.50
Relaying Rails	23.50 to 24.00
Old Iron Rails	18.00 to 18.50
Standard Hammered Iron Car Axles	20.00 to 20.50
Old Steel Car Axles	17.00 to 17.50
No. 1 Railroad Wrought	16.50 to 17.00
Iron Track Scrap	13.50 to 14.00
No. 1 Yard Wrought, long	15.50 to 16.00
No. 1 Yard Wrought, short	14.00 to 14.50
Light Iron	8.00 to 8.50
Cast Borings	8.50 to 9.00
Wrought Turnings	9.50 to 10.00
Wrought Pipe	12.00 to 12.50
Old Car Wheels	15.00 to 15.50
No. 1 Heavy Cast, broken up	14.25 to 14.75
Stove Plate	12.00 to 12.50
Locomotive Grate Bars	12.00 to 12.50
Malleable Cast	13.50 to 14.00

Ferroalloys.—The market continues quiet, but there is a little broader tendency noted in Ferromanganese, and sales have been made on a basis of $45, seaboard, which is an advance of $2 over the quotation of last week. There is not the activity in 50 per cent. Ferrosilicon that there is in Ferromanganese, but the price is practically unchanged, at $68.

The Electrical Alloy Company, Morristown, N. J., incorporated with a capital stock of $50,000, has leased a plant to manufacture wire from various alloys, the production to be used principally by manufacturers of electrical apparatus. H. P. Reigart is president; W. H. Kissam- vice-president and general manager, and S. F. Reigart, secretary and treasurer.

Iron and Industrial Stocks.

NEW YORK, November 18, 1908.

Another week of great activity has been witnessed on the Stock Exchange. Many of the iron and industrial shares appeared to be in popular favor, and prices were either advanced to record figures or to a level which had not been reached for a year or more. Prominent among these were United States Steel and American Can stocks. The range of prices on active stocks from Thursday of last week to Tuesday of this week was as follows: United States Steel common 54⅜ to 58¾, preferred 112⅝ to 114⅛; Bethlehem Steel common 24½ to 27¼, preferred 53 to 57; Car & Foundry common 45½ to 47¾, preferred 106½ to 107⅜; Locomotive common 53⅞ to 57¼, preferred 109¾ to 110½; Steel Foundries, new, 39 to 40½; Cambria Steel 38½ to 40; Colorado Fuel 38¾ to 40⅝; Crucible Steel common 8¼ to 8½, preferred 52⅛ to 54; Pressed Steel common 38¾ to 40½, preferred 99 to 99¾; Railway Spring common 44⅜ to 45¼, preferred 100½; Republic common 27¼ to 29, preferred 87 to 89½; Sloss-Sheffield common 78 to 81½; Cast Iron Pipe common 28 to 29, preferred 75¾ to 76; Can common 9 to 10¼, preferred 73½ to 75½. Last transactions up to 1.30 p.m. to-day are reported at the following prices: United States Steel common 57⅞, preferred 113¾, bonds 102¾; Car & Foundry common 46⅝, preferred 107; Locomotive common 56⅛, preferred 109¾; Colorado Fuel 39¾; Pressed Steel common 40½, preferred 99; Railway Spring common 45¼; Republic common 28½, preferred 88⅛; Sloss-Sheffield common 81; Cast Iron Pipe common 27¾, preferred 75; Can common 9½, preferred 74½.

A special meeting of the stockholders of the Westinghouse Electric & Mfg. Company will be held in Pittsburgh, November 24, to provide for the carrying out of the reorganization plan. The stockholders will be asked to make changes in the by-laws required by the plan, and to increase the capital stock by $10,000,000, as well as to adopt the necessary resolutions to make the plan itself effective.

Dividends.—The J. A. Fay & Egan Company, Cincinnati, Ohio, has declared quarterly dividends of 1¾ per cent. on the preferred and common stocks.

The General Electric Company has declared the regular quarterly dividend of 2 per cent., payable January 15.

Leak-No Compound for Repairing Iron and Steel.

Thousands of dollars are spent every year replacing machinery and parts, automobile cylinders, castings, radiators, boilers, firepots, pipes and a thousand and one other things which have become useless because of cracks, spongy spots, sand holes or blow holes. It is not uncommon for defects in castings or cracks to make practically worthless expensive pumps and other machinery. There is hardly a factory of any size that does not contribute something to the scrap heap every year which could be saved were it possible to repair defects in iron and steel. This is now made practicable by the use of a product which the H. W. Johns-Manville Company, New York, is placing on the market under the name Leak-No metallic compound.

Leak-No is a chemical compound resembling powdered iron. When mixed with water and applied like putty to defects in iron or steel articles, the manufacturer claims that it metallizes and becomes a permanent part of the article to which it is applied, stopping any ordinary leak in anything made of iron or steel against any pressure of oil, steam, gas, air, ammonia or water; and to stand any heat or chemicals that iron will stand when applied according to directions. When hard its color resembles that of iron.

The annual convention of the Roadmasters and Maintenance of Way Association of America was held at Milwaukee, Wis., November 10 to 12, and was attended by delegates from the leading railroads in all parts of the country. A feature of the convention was an exhibit of supplies, including wire fencing, rail joints, frogs and appliances used in track laying. The newly elected president is A. E. Hansen, Green Bay, Wis. Walter E. Emory, Chicago, is secretary and treasurer.

A series of important tests were conducted at Portsmouth, England, with the De Forest system of wireless telephony. Messages were sent satisfactorily from vessels to shore, a distance of 40 miles.

Nickel Steel for Bridges.

In the September number of the *Proceedings* of the American Society of Civil Engineers an exhaustive paper is printed giving a résumé of investigations made by J. A. L. Waddell of the comparative value of nickel steel and carbon steel for bridge building. The work undertaken included: 1. The determination of the proportions of nickel and carbon that will give a steel of the highest ultimate strength and elastic limit consistent with proper working in the shop and with absolute safety in structures. 2. The making of tests of nickel steels adopted as standard and corresponding tests of carbon steel. 3. The preparation of specifications for nickel steel bridges. 4. The making of diagrams of weights of metal per linear foot of span for various types of bridges. 5. The preparation of diagrams giving actual costs per linear foot of span for nickel steel and carbon steel structures.

The Percentage of Nickel.

It was found that for plates and shapes any materially greater percentage of nickel than 3½ makes the alloy too refractory for shop manipulation, though structures of steel still higher in nickel would be perfectly safe. As to carbon, it was found that the greater the percentage of nickel in the alloy the greater the permissible amount of carbon, and as carbon adds to both ultimate strength and elastic limit it is economical to use as much of it as workability in the shop and safety in operation will permit. The maximum percentage of phosphorus recommended in nickel steel is 0.03; of sulphur, 0.04; of silicon, 0.04. The manganese percentage recommended is 0.75 for plate and shape steel and 0.85 for eye-bar steel. Details are given of the various tension, bending, shearing, impact, hammering, punching, filing and other tests made on nickel steel; also data concerning corrosion tests. As the result of the latter the writer considers that nickel steel may well be used for ocean piers and for bridges located near salt water. Two special 40-ton melts of plate and shape steel were made for the tests, the general averages of analysis being as follows: Nickel, 3.65 per cent; carbon, 0.39 per cent.; manganese, 0.77 per cent.; sulphur, 0.025 per cent.; phosphorus, 0.01 per cent.; silicon, 0.05 per cent.

The average elastic limit was about 62,200 lb. per sq. in., and the average ultimate strength about 107,300 lb. per sq. in. It was found that the average ratio of elastic limits of nickel steel to carbon steel was 1.94, and of ultimate strength 1.79. The minimum elongation in eight inches was about 15 per cent. for nickel steel and 27 per cent. for carbon steel. The minimum reduction of area was about 41 per cent. for nickel steel and about 55 per cent. for carbon steel. Thick plates and angles gave lower elastic limits and ultimate strengths than thin ones. While this was already known for carbon steel, the difference is so marked in nickel steel that standard specifications would need to take into account the thickness of the piece tested.

As the result of his investigations the writer considers it practicable to write specifications for nickel steel bridges which will possess the same strength, rigidity and excellence of design as the best carbon steel bridges that are being built to-day. In bridges of mixed nickel and carbon steel the floor system, the lateral system, and those parts of trusses of minor importance, such as struts having a large excess of section above the theoretical requirements, lacing bars and stay bolts may be made of carbon steel, but the floor system should preferably be of nickel steel.

The Economy of Nickel Steel.

Elaborate comparisons of costs are made as between nickel steel and carbon steel bridge work. Nickel steel ingots, it is computed, cost about 1 cent per pound more than those of carbon steel when nickel is worth 30 cents a pound. Figuring the difference in cost of rolling and of shop work gives a total excess cost of nickel steel bridge work delivered at site of 1.5 cents per pound.

Diagrams are given comparing the cost of 12 types of bridges of carbon steel and of mixed steel. These are based on the following average pound prices for carbon steel bridges erected in the United States:

	Cents.
Plate girder spans	4
Riveted truss spans	4.5
Pin connected Pratt truss spans	4.5
Pin connected Petit truss spans	5
Cantilever bridges	5.5

In every case an excess of cost of carbon steel bridges over mixed steel bridges is shown, except for deck, plate girder spans of less than 33 ft., and the longer the spans the greater the economy. A further advantage is in the possibility of building longer spans than are now attainable. If 1800 ft. be assumed as the present practicable span length for carbon steel bridges, the corresponding limit for nickel steel bridges will be about 2300 ft. In general it is calculated that the adoption of nickel steel for bridges would lengthen the practicable span length for cantilevers fully 500 ft. In conclusion the author says:

"Summarizing the results of this entire investigation of nickel steel for bridges, it is evident that nickel steel is in every way fitted for bridge construction in that it is strong, tough, workable and reliable; moreover, its adoption would effect a decided economy. This economy would increase in the future as the cost of nickel decreases and as the shops become more accustomed to the fabrication of the new alloy. That nickel will soon be less expensive is a foregone conclusion, in view of the immense deposits of nickel ore that have been located and surveyed in Canada. It is said upon good authority that there has been found in one deposit in that country ore containing fully 200,000 tons of the metal.

"While the writer has never known nickel to have been sold for less than 30 cents per pound, nevertheless he is of the opinion that, should this material be called for in large tonnages for bridge building, it might be purchased as low as 25 cents. It makes a great difference in the price to the producer whether a metal is sold by the pound or by the ton; and tons of nickel would be required where pounds are bought to-day, were nickel steel used extensively for bridge work. At 25 cents per pound for nickel, the price of rolled nickel steel would be about 0.2 cent per pound lower than it would be with nickel at 30 cents per pound, and it is likely that the cost of manufacture would be reduced in the same proportion, thus making the price of nickel steel bridge metal delivered at site 1.2 cents per pound above that of carbon steel work."

Seagoing Suction Dredges.

A paper by Thomas M. Cornbrooks, presented at the meeting of the Society of Naval Architects and Marine Engineers in New York, November 19 and 20, refers to a number of seagoing suction dredges which have been built for the United States Government in the past five years. These range in length from 166 to 300 ft., and capacities of bins from 1000 to 3000 cu. yd. The latest dredge is the Galveston, which has just been completed at the works of the Maryland Steel Company, Sparrows Point, Md. In operating, it is kept moving forward, at a speed of six knots per hour, with the suction pumps dragging on the bottom. The material is sucked up by 20-in. centrifugal pumps and discharged through pipes and distributing chutes into the bins. By gates in the bottom and sides of these chutes it is possible to distribute the material evenly. As the bin fills the water is drained off by overflows through the sides. The load is discharged by opening the gates in the bottom, which are operated by a double cylinder vertical engine through worms and fixed nut on vertical rods. The dredge is propelled by two compound engines, steam for which is furnished by four single-ended boilers.

Notices have been posted at the Bessemer steel plant of the Republic Iron & Steel Company, Youngstown, Ohio, that there will be a readjustment of wages on January 1. Wages in the company's steel finishing mills in the Youngstown District will also be readjusted, effective on the same date.

The Machinery Trade.

NEW YORK, November 18, 1908.

Business with machinery houses is gradually improving, but the increase in demand is only slight as yet. There were a few more orders placed the past week, and inquiries were numerous, but they covered only a few tools each. While no extensive requirements were reported the volume of small orders and inquiries was sufficient to enable merchants to report a better trade than a month or two ago, but the improvement from week to week is not so pronounced. It is believed that the large interests, particularly the railroads, will have to come into the market more freely and for more extensive lists of tools before there will be a very active demand. It is so near the end of the year that it is probable that many purchases will be held off until after January 1, so as to keep expenses for the current year as low as possible. Already some orders have been placed in this market to be billed in January. This tendency is not unusual at this time of the year, and merchants are somewhat encouraged by the prevailing demand, believing that it will be greatly augmented by the releasing of orders at the opening of the new year.

An indication that railroad buying will pick up shortly is contained in the statement made by the representative of a prominent establishment which makes a specialty of jobbing in railroad cars and locomotives, to the effect that the railroads of the country have during the last few weeks weeded out fully 10,000 old cars for replacement. These cars were disposed of to buyers of old material, and the selling in this line during the last month has exceeded all of the old material sold by the railroads during the previous months of the year. When it is considered that railroads send a large number of their cars to their own shops for repairs it is seen that the replacing of all the cars recently put out of commission will mean some considerable expenditures in the machinery line. In the same connection it may be added that a recent large order for cars placed by an Eastern railroad was in contemplation for 11 months, and the fact that action was taken shows that conditions are more encouraging. The Erie Railroad and the New York Central Railroad have a number of inquiries in the market at present for machine tool equipment which is to be used in various repair shops, and although they do not include any particularly large lists they will aggregate a tidy sum in the way of expenditures.

Mining machinery men report a growing demand for general mining equipment in this country as a result of the recent renewal of activity in Western mines. There is now a fairly good demand for mining machinery for Mexico, and it should be added that Mexican trade has been quite steady during the recent depression in this country, and has gone far toward keeping manufacturers of general mining equipment fairly busy.

Delaware, Lackawanna & Western Scranton Shops.

The trade has been selling considerable equipment of late to the Delaware, Lackawanna & Western Railroad for its car shops at Scranton, Pa., which are now in course of construction, and it is thought probable that still more machinery will soon be required, as it is expected that at least part of the company's locomotive construction plant will be put in commission before another year is over. It will be remembered that the company spent about $75.000 for machinery for its foundry and blacksmith shop several months ago, and now it is stated that the new machine shop is well under way and requirements for this part of the plant may shortly be filled. The shop will be about 346 x 582 ft., and, although it was stated some time ago that the plant would not be put in commission for more than a year, it is stated in the trade now that judging from some inquiries which have been made a big machine tool list, which will include some particularly heavy equipment is being prepared. It has been stated by the chief engineer of the company that during 1909 the company will begin to build some of its own locomotives, and if this plan is carried out the machine shop will have to be put in commission. Most of the contractors at work on the new cut-off between Lake Hopatcong and the Delaware Water Gap, which is being constructed for the company, have full plants in action. There has been a good deal of buying from those sources in the way of supplementary equipment and general supplies for operating purposes, and from time to time scattered orders will undoubtedly be placed for machinery for this work. It is said that the construction of the cut-off and the completion of the Scranton shops will comprise the major part of the improvements contemplated by the Lackawanna for the ensuing year.

A number of inquiries in the market indicate that the Westinghouse Electric & Mfg. Company, Pittsburgh, Pa., will shortly place some good sized contracts for equipment for the proposed terminal of the Pennsylvania Railroad in the vicinity of Harrison, N. J. As has been stated, the initial cost of the terminal will be in the neighborhood of $5,000,000, and about 250,000 hp. will be generated to supply power for the electric zone which the company will establish in the New York territory. In addition to the boiler equipment the Westinghouse Company will probably place contracts for coal handling and conveying machinery, and perhaps some machine shop equipment for repair purposes.

It is understood that orders will shortly be placed for machinery for the new plant of the Georgian Mfg. Company at Binghamton, N. Y. This company has taken over the plant on Glenwood avenue and the Lackawanna Railroad formerly occupied by the Innes-Demarest Stove Company, and it is said that the plant will be completely equipped for the manufacture of valves and other brass and iron goods. Consulting Engineers S. O. & H. A. Lacey, Phelps Bank Building, Binghamton, have been detailed to prepare plans for the rebuilding of the present buildings and for the construction of other new buildings on the additional site of 3 acres which has been acquired. The plans contemplate the ultimate expenditure of about $300,000 and provide for a modern iron foundry, brass foundry, machine and pattern shops. A loan of $75,000 was recently made, to be used in the construction of the new plant. This enterprise is of considerable interest to the trade in this section, in view of the fact that officials of the Fairbanks Company, Broome and Elm streets, New York, have a large interest in it. The president of the new company is J. A. Haddock, vice-president of the Fairbanks Company; secretary, Joseph A. Wells; general manager, William Nelson, and superintendent, C. O. Churchill. Messrs. Wells and Churchill are also connected with the Fairbanks Company.

A small sized list of power press equipment has been sent out by the Singer Mfg. Company for its large plant at Elizabeth, N. J. The equipment will include a number of power presses of different sizes.

The Newark Tube & Metal Works, 51 North Fourth street, Newark, N. J., is buying equipment for a new factory building to be erected at 543 Ferry street. It is understood that the power order has been placed, but there are inquiries in the market for other machinery equipment for metal working and stamping. The Russell-Robinson Company, 109 Frelinghuysen avenue, Newark, has the general contract for the plant, which will consist of four one-story buildings of brick construction. The buildings will be 100 x 190 ft., 30 x 92 ft., 26 x 30 ft. and 18 x 24 ft. respectively, and with the exception of the latter structure, which will be a power house, the buildings will all be used for manufacturing the company's line of metal goods.

Owing to the large demand for Maxwell automobiles and the excessive freight rates from the eastern and central parts of this country to the Pacific Coast, the Maxwell-Briscoe Motor Company, Tarrytown, N. Y., intends to erect a new plant in the vicinity of San Francisco, Cal., to produce cars for the Western trade. No plans for the new plant have been prepared nor has a site been selected, but these details will be settled as quickly as possible, it being the intention to start the erection of the new buildings within the next three or four months. A plant will be erected of sufficient size to produce about 4000 runabouts a year.

The plans for the additions to the plant of the Lozier Motor Company, Plattsburgh, N. Y., manufacturer of automobiles and gas engines, are now completed and bids are being received. The additions, which will give 34,000 sq. ft. of floor space, are to consist of machine shop, 150 x 162 ft.; stock room, 50 x 60 ft., and blacksmith shop and testing building, 50 x 90 ft.

The recently organized Drop Forgings Company of New York has acquired title to an existing plant in Jersey City, at the corner of West Side avenue and Fisk street, and is now purchasing a general line of equipment for the manufacture of drop forgings. It is understood that the power has been arranged for.

Fred A. Phelps, 290 Union Building, Newark, N. J., has inquiries out covering some special machinery for making reinforced concrete metal. The machinery is intended for use in the plant of the Consolidated Expanded Metal Company, Pittsburgh, Pa.

There are inquiries in the market for rolling mill equipment for gold plate rolling from Charles S. Platt & Co., 29 Gold street, New York.

The John R. Keim Mfg. Company, Kensington street and Erie Railroad tracks, Buffalo, N. Y., is about to start construction on a one-story brick and steel addition 95 x 190 ft. The company manufactures drawn and pressed steel products which are used largely in the manufacture of automobiles, axles and other parts where strength of metal is required. The new addition will comprise a large press mill containing five large steel presses of modern construction, also two large annealing furnaces. The addition of the above equipment will result in doubling the capacity of the present plant. In addition to these improvements, the entire plant will be changed over to motor drive and the present power equipment held in reserve for auxiliary purposes and heating. Niagara Falls power will be used, and the company is now in the market and will place orders within the next 30 days

for a total of about 600 hp. of motors. Two propositions are being considered. First, the use of individual motors direct connected to a number of the heavier machines, and second, grouping of the machinery and using one motor to each group of machines. In case the latter proposition is decided on the company will be in the market for a large quantity of shafting, belting, pulleys, hangers, clutches and other transmission accessories.

The Bergman Tool Company, 102 Seneca street, Buffalo, N. Y., will soon start construction on a new factory building for the manufacture of light tools and hardware specialties. The new plant is to be more than double the capacity of the present plant. The machinery and tools of the present plant were installed only a year ago and will be moved into the new plant when completed. The present capacity will be tripled and considerable new machinery added. The only items definitely determined on at the present time is the purchase of one automatic screw machine, two milling machines, two new lathes, pulleys, shafting, hangers, clutches, belting, a quantity of smaller tools, also one 60-hp. gas engine for operating generator and a 40-kw. generator for power and lighting. Preliminary bids can be submitted any time, but orders will probably not be placed until after January 1.

J. L. Osgood, Buffalo, N. Y., dealer in machinery, tools and shop equipment, has purchased the plant, business, patterns, &c., of the Standard Automatic Lubricator Company, manufacturer of automatic sight and force feed lubricators of all sizes and numbers of feeds.

M. S. Friede, who formerly had offices at 71 Broadway, New York, and was a large purchaser of American machinery which was used on the construction of the Trans-Siberian Railroad, sailed November 18 for Russia, where he will represent the Ideal Concrete Machinery Company of South Bend, Ind., and a number of manufacturers of machine tools, railroad specialties, hardware, &c. He will establish offices throughout Russia, with headquarters at St. Petersburg, and will also have connections at Harbin and Vladivostock. Through his acquaintance with the Russian trade Mr. Friede expects to sell considerable American equipment, especially for the new Amur Railroad, which is to be built by the Russian Government paralleling the Trans-Siberian Railroad. It is said that Russia expects to spend fully $400,000,000 on this project, and it is probable that some substantial business will come to this country from that source.

The Prudential Insurance Company, Newark, N. J., is awarding contracts for a large office building to be erected in that city and the requirements include power equipment to generate about 2500 hp. in addition to some other electrical machinery, including 16 passenger elevators.

W. F. Hulse, 30 Church street, New York, has inquiries in the market for power equipment to generate about 400 kw., to be installed at Arden Farm, a country estate of E. H. Harriman.

D. G. Ziegler & Co., Atlanta, Ga., engineers for the Suwanee River Railroad & Power Company, which intends to establish a hydro-electric plant on the Suwanee River about 50 miles from Jacksonville, Fla., where about 25,000 hp. can be developed, expects to be able to place contracts for the work about December 15. Plans and specifications for the construction work will be finished in a few weeks. This enterprise will require the expenditure of about $3,000,000.

Thomas E. Gildea, 517 Grape street, Syracuse, N. Y., has been awarded general contract for the power and heating plant to be installed in the Onondaga County Hospital buildings at his bid of $23,743. Mr. Gildea will handle the installation and piping and will sublet contracts for equipment, consisting of three 150-hp. horizontal tubular boilers, two 100-kw. generating units, two 150-hp. high speed engines, one 35-kw. generating unit, one 52½-hp. high speed engine, engine and generators to be direct connected; pumps, switchboards and other accessories. The above contract was awarded to Mr. Gildea November 5.

The 200-room annex to the Yates Hotel, Syracuse, N. Y., for which plans are now being prepared by Architect A. L. Brockway, 53 Syracuse Savings Bank Building, will include a steam electric generating plant, consisting of two boilers, two direct connected generating units attached to high speed engines, boiler feed and circulating pumps, refrigerating plant and other accessories. Bids will be called for during January.

New England Machinery Market.

BOSTON, MASS., November 17, 1908.

Some disappointment is expressed because the increase in demand for machinery has not been more strongly felt, but the more conservative element of the trade expresses itself as satisfied with the improvement. More machines have been sold during the week. This applies equally well to the manufacturers and the dealers. Occasionally a machine tool builder states that he has not yet noted a material change in actual orders booked, but there is no exception to the statement that inquiries are more numerous and promising and that the feeling in the trade is very much better. In the enthusiasm which followed the satisfactory outcome of the great political struggle, the natural tendency was to expect an almost revolutionary change in the market. Very naturally this anticipation was followed by disappointment. Conditions were such that the change had to be a gradual one, which has proved to be the case. Outside of the machine tool trade, many lines of manufacturing are experiencing a greater improvement. The rule seems to be increased working hours and gradually enlarged working forces. Of course the degree of improvement varies very much. One extreme is the boiler business, which has not revived to any great extent. The other extreme is certain classes of products which go direct to the retail consumer. Some concerns in these lines are working overtime, and many others are having normal, or nearly normal, business. Various indirect signs indicate the general change in conditions. For example, the express companies have become almost congested during the fortnight just past. A great many hurry orders have been shipped through these channels and will serve to make the Christmas rush more pronounced and difficult to handle. The railroads are hauling an increasing volume of freight, a notable gain in this respect being noted in the Naugatuck Valley, resulting from the betterment in the brass industry.

There is a good deal of discussion as to whether the period of industrial prosperity, which seems to be imminent, will be preceded by a reaction which would follow a spurt due to the rushing in of stock orders. The best opinion seems to be that such will be the case. But it is certain that if there is to be a spurt in the machine tool trade its beginning has hardly been made. Neither are very many large orders being booked by dealers and manufacturers of supplies. There are a great many orders, but on the whole they are small. The number has increased noticeably, and the volume as well, but it is evident that the larger buyers have not entered the market to any great extent. This condition is especially observed in the steel trade. The dealers report a larger business, though the change has not been an important one. The number of their orders is very large, indeed, but the individual quantity is small. Even those of the large plants that are buying are confining their orders to small lots, though in some instances these orders have been frequently repeated. Apparently consumers have not yet reached the point where they wish to replenish their stocks of supplies and materials. But the steel trade, in common with every other metal line, is confident that the situation is improving, and that it will improve still more rapidly a little later, and still more rapidly early in 1909. Reports are coming from the traveling men all over the country of important works which are starting up, after months of utter depression, and which must, in the natural course of events, be buyers as soon as they get under way again. There is no better illustration of the manner in which buying has been curtailed to the last limit than in the steel trade, especially in the tool steel trade. Shops have gone to extreme lengths in their economies in this direction. Supplies of steel have been reduced to such an extent that recourse has even been made to the scrap heap. Wastefulness has resulted; larger sizes than required of expensive steel have been turned down to much smaller dimensions rather than spend cash in granting the requisitions of the shop. The dealers know that their customers will be compelled to buy in large amounts very soon after they begin producing on a large scale. There is now no alternative; makeshift methods have been exhausted.

The Bresnahan Shoe Machinery Company, Lynn, Mass., is preparing to make a substantial increase in manufacturing capacity, and will be in the market for a lot of machine tools, the list of which will soon be out. The company is one of the independent concerns which manufacture shoe machinery, and already has a plant of considerable size. It has recently purchased a few tools.

The wire business in Worcester continues to show a marked improvement, and all of the mills are either running on normal time or are approaching it. This includes the American Steel & Wire Company, Morgan Spring Company, Spencer Wire Company and the Wright Wire Company. The condition extends through all departments, but is naturally more pronounced in some than in others. The American Steel & Wire Company proposes to start up its works at New Haven, formerly operated by the National Wire Corporation, as soon as business reaches the point where this additional capacity will be needed. The works have been put in shape, so that there will be no delay in beginning operations when the decision to operate them is reached.

The Tiley-Pratt Company, Essex, Conn., manufacturer of specialties, is erecting a new factory to replace the old. The plant will consist of one-story buildings, one 40 x 200 ft., the other 30 x 80 ft.

The second annual Industrial Show, which was originally planned for last week at Hartford, Conn., has been postponed to the week of February 1.

A. L. Krouse, Bridgeport, Conn., manufacturer of white metal goods and art novelties, is building a one-story brick factory, 40 x 90 ft.

Cincinnati Machinery Market.

CINCINNATI, OHIO, November 17, 1908.

Of the various incidents of the week in the machine tool industry none tend to show more clearly and definitely the beginning of an era of reconstruction in trade than several reinstatements of orders that were originally booked early or during the middle of 1907, and canceled in that memorable last quarter of the year. One of these calls for 10 milling machines of the horizontal type. Other business of the week received under the same conditions orders shipment on lathes, planers and sharpers, and all are to domestic points. Some machines are being shipped to Europe also, and manufacturers in this section are watching the foreign pulse with renewed interest. A Government order of the week calls for four planers, medium size, on which it is understood there was considerable competition. The concern which secured the shipment has received a number of nice orders, and is preparing for considerable business in the larger types, for which it is exceptionally well prepared in a new building and equipment designed to handle heavy machines exclusively. Another manufacturer making a specialty of lathes has booked a stock order calling for 22 machines in one shipment, to go to a prominent dealer who is convinced that he will need them very soon.

The Cincinnati Machine Tool Company recently shipped a carload of upright drills for export and will have another this week. This company is preparing for increased activity in every department, and looks forward to a slow but gradual and healthy improvement in all branches of the tool industry. Some manufacturers have increased time a little, so that 40 hr. a week now represents about the average, although a few have reinstated the 55-hr. schedule. As a rule, while all tool manufacturers here regard conditions as showing marked improvement and the outlook good, there is a disposition to deprecate the policy of the sensational newspapers in publishing columns of padded stuff affecting to show a tremendous revival in industrial operations. All machine tool builders in this market view with the greatest satisfaction growing evidences of confidence on the part of the railroad corporations, and the signs which indicate that some belated buying is an early prospect. Representatives of the Pennsylvania Company have been here inspecting tools and buying for the shops at Ft. Wayne and other points. The Wheeling & Lake Erie has already bought a large consignment of woodworking machinery for installation in its Ohio shops, and several large tool manufacturers are hoping to receive orders for machine tools to be installed in its Ironville shops. Rumors of some good pending orders from the New York Central are current here.

In the upper part of the State indications of returning confidence are specially prominent. The announced resumption of operations in full in all departments of the Piqua plant of the American Sheet & Tin Plate Company this week was received with great demonstrations of pleasure by both employees and fellow manufacturers in that district. Superintendent Wuerdeman is exceedingly pleased with the outlook and, beginnig with the replenishment of stock which was necessarily low because of the shut down of the year, hopes to engage the greater part of the force constantly from now on. This plant was closed down October 12, 1907.

There is considerable talk in manufacturing circles of a new Ohio and Eastern concern to manufacture chains and other similar products, with factories in Duluth, Buffalo and Columbus, the Ohio plant to be devoted to the manufacture of light chains, to which may be added departments for making tacks, screws and other small articles. Those familiar with the movements of the promoters say that definite plans may not be announced before spring.

Jobbing foundries are all increasing their melts, some making heats of 10 to 15 tons daily. The larger foundries are getting some orders for heavy castings for planer, lathe and ice machine beds, something unknown to them for a year. One large local foundry will cast next Saturday a 30,000-lb. base for a big special order ice machine, and a number are making bases and castings for various machines ordered since election.

The dealers in second-hand tools are finding some increase in inquiry, with evidences of less disposition to haggle for lower prices. Dealers are beginning to stock up on standard tools in new machinery, and the manufacturers find every mail filled with inquiries that breathe confidence in a gradual restoration of confidence

Particularly optimistic are the heads of departments of the great agricultural implement works in this section, and this is being emphasized by the purchase of large blocks of pig iron for delivery to their various plants. The first of a number of large shipments to Russia was recently made by the Champion division of the International Harvester Company. The new foundry of the division of the American Seeding Machine Company located at Springfield has been completed and all departments are getting busy on orders from Russia and Argentina. All the company's business is now concentrated in the two plants at Richmond, Ind., and Springfield, Ohio, the Hoosier and Superior divisions, respectively.

The Buckeye Steel Castings Company at Columbus is reported to be operating about 50 per cent. of its capacity, with indications promising a steady improvement. Recently a second open hearth furnace was put in blast and work on extensive improvements planned some time ago is being rushed.

In the Interests of Mechanics.

The Executive Committee of the Cincinnati branch of the National Metal Trades Association, consisting of E. H. Hargrave, Henry Ritter, Emil Von Wyck and E. M. Chase, together with John W. Neil, president; B. B. Quillen, vice-president; J. B. Doan, treasurer; F. E. Le Blond, secretary, and J. M. Manley, assistant secretary, have sent to Mrs. Thomas Emery, widow of the deceased capitalist, who has endowed a $500,000 building for the Ohio Mechanics' Institute, a letter of congratulation and approval. The letter recites that it is the largest single gift ever presented any school in this State for the sole purpose of industrial education, and concludes with a characterization of Mrs. Emery as "Cincinnati's most benevolent and distinguished lady citizen." The new building will be located at Canal and Walnut streets in Cincinnati, and the architects, Samuel Hannaford's Sons, builders of many important structures in this and adjoining cities, and particularly at Columbus, are now busy with the drawings and specifications. It will be constructed principally of reinforced concrete, and is expected to be one of the handsomest structures in the world devoted to mechanical education and development. Bids will be asked for late in January or early in February.

Chicago Machinery Market.

CHICAGO, ILL., November 17, 1908.

Though no notable gains were observed in any section of the machinery market last week, evidence of a better feeling and disposition to go ahead with greater confidence is quite unmistakable on every hand, and inquiries are not only more plentiful, but are distinctly less tentative in their nature than they were prior to election. There are signs also which are interpreted as indicating an inclination on the part of the railroads to be less restrictive in their purchases. What the railroads may themselves buy in the way of machinery equipment is, perhaps, not of so much importance as the business that will come from allied manufacturing interests whose product is largely consumed by the railroads when orders from this source are plentiful enough to reengage all idle producing capacity. There is already a marked increase in the demand for supplies entering into car repair work, and new car construction is slowly increasing. Many rumors are current which credit the transportation interests with active efforts in negotiating funds to be applied in the purchase of equipment and for other purposes. It is believed that a large number of inquiries for tools and machinery have accumulated in purchasing departments during the last few months, which will doubtless be purchased when necessary financial arrangements have been made to take care of them. Thus far, however, these preparations, whatever they may be, have not resulted in any business of moment, the few orders coming out for indispensable requirements. Two or three inquiries of this character, for machine tools, are being figured on in the local market this week.

There is a better assortment of tools on floors of the leading local houses than has been seen for a long time, and no difficulty is experienced in promptly supplying standard tools from stock. Actuated by a conviction that the hopes of a steady improvement in business will be realized, some of the leading dealers have recently placed fair sized orders with the manufacturers. Within the past two weeks, one house has purchased several carloads of new tools, the orders being distributed among three or four Western factories.

Communications of a late date from machinery makers of various kinds uniformly express satisfaction with the present trend of affairs, and nearly all show gradual improvement in new business and reasonably prompt collections. Among those heard from are the following concerns:

Ransom Mfg. Company, Oshkosh, Wis., says: "A gradual increase in trade commencing in August has continued up to the election. Our confidence in the future is indicated in the fact that we have just placed orders for a considerable amount of material, and look for a gradual healthy improvement in trade." Rock Island Tool Company, Rock Island, Ill.: "Collections are reasonably good, and our business has showed a decided increase for the last three months, the month of November in particular promising to be the best month of our existence. We have well under way the construction of a new machine shop and foundry, which will more than quadruple our capacity, and will be modern, both

in its structure and equipment." Independent Pneumatic Tool Company, Chicago, Ill.: "The sale of Thor pneumatic tools and appliances for the month of October showed an increase of approximately 25 per cent. over any other month of the present year. Besides orders from railroads, foundries, machine shops, &c., we are receiving an unusually large number of inquiries, which we are confident will result in orders before long."

The Campbellsport Wooden Ware Company, Campbellsport, Wis., has been organized to manufacture boxes, crates and other woodenware, for which purpose some motive power and woodworking machinery will be required. A boiler has already been purchased from the Milwaukee Boiler Company, Milwaukee, Wis., but orders for the engine and other woodworking machinery, including a veneer machine and clipper, one heading saw, one circular saw, double surfacer planer, &c., have not been placed. The company was incorporated with a capital stock of $10,000 by E. F. Martin, M. A. T. Hoffman and William Knickel.

The Gardner Machine Company, Beloit, Wis., is occupying in addition to its former shop building the entire plant vacated by the Warner Instrument Company, when the latter moved into its new quarters some months ago. The company reports a very good run of orders, which expanded considerably immediately after election, and still continue at a fair rate. Notwithstanding the increased capacity of the factory it is now running overtime and a night shift will go on next week. Collections are improved, and the general situation looks very good. The company has under construction two entirely new machines, which will be brought out within the next few weeks.

Moran Brothers, Fort Wayne, Ind., have let a contract to the Henry Voght Machine Company for the installation of a 40-ton ice machine, with 50-ton brine tank, which is to be completed about the middle of April next. The plant will be supplied with a storage room of 500-ton capacity.

The Wesco Supply Company, Birmingham, Ala., has been incorporated with a capital of $5000 to manufacture and handle electrical machinery and supplies. This company is closely identified with the Wesco Supply Company of St. Louis, Mo., and will be operated as a branch of that concern, in conjunction with a branch warehouse at Fort Worth, Texas, and sales offices at Denver, Colo.; Salt Lake City and Seattle. The officers of the new company are: Rogers V. Scudder, president; Charles Scudder, Jr., vice-president, and W. W. Moore, secretary and treasurer.

The Ingersoll Milling Machine Company, Rockford, Ill., has for some months past been busy with the preparations of facilities to manufacture its new line of knee type combined horizontal and verticle spindle milling machines, which will be built in two sizes, No. 3 and No. 5. This work requires many fixtures, jigs and new tools, among the latter being a special shop milling machine 6 ft. square and 30 ft. long, carrying 14 milling heads, which have been designed and built for this work. The company is preparing a new catalogue which will be out about February.

The D. O. James Mfg. Company, Chicago, is equipping a new rotary tunneling machine of new design, now being constructed in the shops of the Vilter Mfg. Company, Milwaukee, with the speed reducing transmission gear, which was illustrated and described in *The Iron Age* of July 30. The work required in this service is of an exacting character, and will afford a critical test of the capabilities of this mechanism.

The city of Weatherford, Okla., has authorized a $25,000 bond issue for the installation of an electric light plant and the extension of its present water system. Definite specifications for the machinery equipment have not yet been made, but the requirements in a general way will include one 150-hp. high pressure boiler, two 100-kw. alternating current generators direct connected with Corliss valve type engines, switchboard, lamps and other accessories; also a new fire pump. Complete specifications will soon be ready and bids on this equipment will then be invited.

An expenditure of $40,000 has been authorized by the city of Topeka, Kan., for the installation of a new electric light plant. Bids for the machinery and equipment required for this improvement are now being taken.

Bids are being invited by the Government for furnishing the labor and material required for the construction of an electric plant to supply current for lighting and small motors at Fort Robinson, Neb. This work is in charge of Capt. F. T. Arnold, constructing quartermaster, Fort Robinson, and plans and specifications may be consulted at the office of the chief quartermaster, Chicago, and depot quartermaster, St. Louis, Mo.

The Northern Engineering Works, crane builder, Detroit, Mich., has changed the location of its Chicago branch office from 405 Monadnock Block to 539 Monadnock Block, with B. C. Wolcott in charge as formerly.

During the year 1907-1908 40 steel cars were added to the car equipment of the Philadelphia Rapid Transit Company for use on the elevated division.

Cleveland Machinery Market.

CLEVELAND, OHIO, November 17, 1908.

The machine tool market has shown an activity the past week that was even better than dealers who looked for an improvement after election had dared to hope for. Machinery houses report a large increase in sales and inquiries. While the market is expected to continue fairly active for a week or two, dealers look on the present activity as a spurt caused by the placing of orders that had been held up until after election, and while they are optimistic of the future, they do not expect that the pace that has been set the past few days will be kept up during the balance of the year.

The demand for machine tools has come from all classes of manufacturers throughout this territory, some of the orders being for several good sized tools. Some plants are buying new tools to add to their equipment, and others are replaciug old tools with new. To the surprise of the dealers the automobile people, who were thought to have been practically through buying for the season, have again come into the market and a large share of the sales during the week were made to automobile plants. Some of these had not purchased additional machine tool equipment this season, and others that had already bought decided to further increase their equipment, being encouraged by the result of election and the outlook for improvement in general conditions during the coming year. Some machine tool inquiries that were made a few months ago have been revived and are expected to result in the placing of orders. The outlook for business from the railroads is better. The Lake Shore Railroad, which has purchased very little in the machine tool line during the past year, is expected to come into the market next month for some tools for shop equipment. Among the new inquiries of the past week is one from the American Steel & Wire Company for several machine tools. Machinery houses report a decided improvement in the demand for mill supplies, which is now very good.

The Cleveland branch of the National Metal Trades Association has obtained an expression of the views of a large share of its members during the past few days, and they are very optimistic regarding the future. Considerable improvement is noticed in the general manufacturing situation since election. Some manufacturers have put more men to work and others that have been running on short time have increased their working hours to their normal length.

While the local jobbing foundry situation has not improved much as yet, there is an increase in inquiries for both light and heavy iron castings. Low prices are still being quoted, particularly on heavy castings.

The Wheeling & Lake Erie Railroad purchased during the past week several additional woodworking tools, and has a list out for about 15 large iron working tools and other equipment that will be installed in its shops at Ironville and Norwalk. The list includes drills, lathes, planers, a radial drill, punch and shears, bending roll and four or five oil furnaces. This railroad has definitely decided not to rebuild its main machine repair shop at Norwalk. The new shop will probably be located at Justice, Ohio, although the location has not yet been officially announced. Plans are as yet somewhat indefinite regarding the building of the new shops, but when they are built it is expected that some more machine tools will be required.

The Allyne Brass Foundry Company has purchased a factory building adjoining its Detroit plant and will increase the capacity of that plant for the manufacture of plumbers' brass goods which this company began to make there a few months ago. The building is 50 x 150 ft., and an addition will be built to this structure. The company will soon be in the market for equipment for its factory addition. The Allyne Company also maintains plants at Cleveland and Buffalo, and reports that all its plants are filled with work and are running at full capacity. The company makes a specialty of automobile work, of which it has a large amount on hand.

The Atlas Car & Mfg. Company, Cleveland, has secured during the past 10 days two Government contracts in Panama that will aggregate about $200,000. One order is for 12 electric locomotives, 30 special concrete cars and a three-phase three-rail system, including about 5 miles of trackage, switches, &c. The other contract is for 30 double motor cars, of 5 tons capacity each, of all steel construction and with steel tired wheels. These cars will be automatic in operation and propulsion. They will start from a point and make a circuit, taking on a load of concrete and dumping it automatically. The electrical equipment which is a motor while coming up the grade is turned into a generator and develops power. Included in this contract is about 2 miles of trackage. The company has also recently received orders for a number of electric locomotives and electric cars for industrial plants. Owing to the improvement in its orders the company is now running its plant on full time and expects to soon increase its working force.

The Cleveland office of the Waterbury Farrel Foundry

& Machine Company reports a very satisfactory improvement in the volume of its orders and inquiries, the improvement being noted in the demand for all kinds of machinery made by this company. Among orders recently received is one from the F. A. Godcharles Company, Milton, Pa., for an equipment of presses, dies and special machinery for the manufacture of a complete line of heavy hinges. This company has added hinges to its present products, and has built a new plant in which new power equipment has been installed and which is now ready for the installation of the machinery for making hinges.

The Brown Hoisting Machinery Company, Cleveland, during the past few days has secured a contract from the Shenango Furnace Company, Sharpsville, Pa., for coal and coke bins, and furnace hoist and larries. It has also secured an order for a cantilever crane from the Solvay Company, Paris, France, and for a cantilever ship crane, with a 140-ft. span, for the Government navy yard at New York.

The Beeman Lock Company, Cleveland, has been incorporated, with a capitalization of $20,000, by Marcus A. Beeman, Charles F. Laughlin, V. C. Leslie, J. R. Beeman and A. D. Frazer. The company will place on the market a new sash lock. The only plant to be maintained by the company will be for assembling its product.

The Board of Public Affairs, Newton Falls, Ohio, will receive bids until November 24 for the following apparatus for the new municipal water works plant in that place: Pumps for water service, feed water heater, boiler feed pumps, boiler, air compressor, air lifts and piping. Copies of the specifications can be secured from the Reliance Engineering Company, Cincinnati, Ohio.

Ground has been broken for the sheet mill that will be built at Columbia Heights, near Massillon, Ohio, by A. B. Clark and others of Canton, Ohio. It is expected that the plant will be ready for operation early in the spring.

The Cleveland Twist Drill Company reports a satisfactory improvement in orders during the past two weeks, and with the promising outlook the company expects soon to have its plant running at full capacity.

The Cleveland Castings Pattern Company reports considerable improvement in orders and inquiries for machinery patterns, and with a good volume of stove and furnace pattern work on hand the company has more workmen employed now than ever before.

John Kraus, city smoke inspector of Cleveland, gave an interesting talk at the regular monthly meeting of the Metal Trades' Superintendents' and Foremen's Club, which was held at the Hollenden Hotel assembly room, November 14. After going through the various causes, effects and cures of the smoke evil, he illustrated with stereopticon views various smokestacks, showing the stacks before and after adopting equipment for the purpose of abating the smoke.

Philadelphia Machinery Market.

PHILADELPHIA, PA., November 17, 1908.

A little real improvement is noted in the local machinery market. Both manufacturers and dealers report a better volume of inquiries, and orders have increased. A good share of the purchases may be classed as deferred orders, which have been held in abeyance pending the election, and which, with the returning confidence on the part of buyers, have now developed into actual business. While the volume placed has not been large enough to influence the general trade conditions, it is encouraging in that it shows the disposition of consumers to go ahead with plans which have been under contemplation for some time. The bulk of the business placed has been small individually and confined usually to single tool propositions. Those of larger size, however, are now being referred to again, and it is believed that it will only be a question of time before they will be seriously taken up. The position of the railroads is constantly assuming better shape. Buying in the shape of rolling stock and general equipment is increasing the output of car shops, steel and iron mills and insures the more active employment of these industries, which in turn is expected to develop business in the machinery trade. This, however, cannot be expected until at least the greater part of the recently idle equipment has been put into service. The trade, therefore, looks for little genuine improvement for the remainder of 1908, particularly when it has been the custom of buyers to hold off purchases toward the close of the year.

It is interesting to note a betterment in the demand for tools of the larger type, orders having been booked in several instances for heavy lathes and planers, but the bulk of the business continues to be for tools of the medium and lighter classes. Manufacturers continue to operate at about the same rate of productive capacity recently noted, but in some few instances the output will be increased as soon as orders recently booked reach the point when they become shop work. This is particularly to be noted in the case of electric crane builders, who have recently booked some very satisfactory orders. Special tool manufacturers will also feel the effect of bettered conditions, as the class of equipment produced permits of little preparation in advance of orders. The makers of tools of the standard types will probably show a slower development, inasmuch as stocks of this class of machine tools, both in their own warerooms as well as those of machinery merchants, which, by the way, have been quite large, will have to be absorbed, particularly in the latter case, before fresh stock orders will be given. On the whole, the trade feels decidedly optimistic regarding the outlook for the future, as it is believed that early spring will find the country well on the way toward normal conditions.

A fair volume of business is reported by second hand machinery dealers. As in the general trade, considerable business which was held up pending the election, was released and orders, while still confined largely to wood and metal working tools of the smaller and medium character, show a material improvement. Prices of second-hand equipment are reported good, particularly for modern tools in good order. There has been an improved inquiry for boilers, particularly those of the medium horsepowers. Some good business in large powers is being considered, but this business as a rule develops rather slowly.

The foundry trade continues to note a small improvement, and many foundries, both gray iron and steel, report increased production. There is more business of a prompt nature coming out and some larger contract work is being considered, but as yet it has not developed into orders. This branch of the trade is greatly encouraged with the outlook for future business.

Bascom & Sieger, Allentown, Pa., engineers, have completed plans for the construction of a water works plant to be erected for the town of Catasauqua, Pa., which will issue bonds to the amount of $80,000 to cover the cost.

The Board of Water Commissioners, Wilmington, Del., will receive bids until noon, November 23, for the construction of a covered, slow sand filtration plant, together with a filtered water reservoir, filter sand washing apparatus and other appurtenances, according to plans and specifications which may be seen at the office of the chief engineer, Sixth and King streets.

Considerable work in retail coal pocket construction of the more extensive type has developed in connection with the elevation of the Philadelphia & Reading Railroad tracks along Ninth street. Among work of this class recently announced has been that for Charles Fleming, Ninth and Berks streets, from plans by Peter Kuhn, architect and engineer, who also has plans on the boards for a coal pocket to be built at Eleventh and Dauphin streets, for N. H. Dougherty.

The Street and Sewer Department, Wilmington, Del., has decided to grant the request of the Harlan & Hollingsworth Corporation to vacate Justison street in that city, which divides a portion of the company's plant and which is required by it to carry out plans for extensive improvements.

One of the leading crane building shops in this territory informs us that the volume of orders taken during the past two weeks fully equalled the total for the best month last year, and a very considerable amount of work is now on its books, a large portion of which has been held in abeyance pending the election. This concern will gradually increase its working forces, as fast as the work in the various departments becomes heavier, but some time will be required until many of the orders in hand are ready for practical shop work.

H. B. Underwood & Co. report an increased volume of business in all departments. They have been operating on about a 65 per cent. basis for some months, but the demand has increased recently, so that the plant has now been put on a 90 per cent. basis. More orders are on the books than for many months past, and the outlook for continued activity is decidedly encouraging. There has been an improvement in buying on the part of the railroads, and work along general engineering lines has increased materially. A slight increase in foreign business is also reported, several portable boring bars and crank pin turning machines having been recently shipped to Japan.

Government Purchases.

WASHINGTON, D. C., November 17, 1908.

The Isthmian Canal Commission will soon ask bids for a 75-kw. direct connected engine and generator and two 185-hp. water tube boilers.

The Isthmian Canal Commission will receive bids until December 7, Circular No. 479, for 10 narrow gauge locomotives.

The following bids were opened November 10 for machinery for the navy yards:

Class 11.—Two ventilating fans and repair parts—Bidder 43, D'Olier Engineering Company, Philadelphia, Pa., $604.10; 157, B. F. Sturtevant Company, Hyde Park, Mass., $571.10; 210, Harron, Ricard & McCone, San Francisco, Cal., $583.95; 222, Sirocco Engineering Company, Troy, N. Y., $836.45.

Class 71.—One double cylinder reversible link motion hoisting engine—Bidder 6, America Hoist & Derrick Company, St. Paul, Minn., $1614 and $1427; 9, Harold L. Bond Company, Boston, Mass., $2350; 55, Exeter Machine Company, Pittston, Pa., $1175; 67, G. & W. Mfg. Company, New York, $1043; 83, Hoisting Machinery Company, New York, $1000; 103, Lenher Engineering Company, New York, $1125; 184, Vermilye & Power, New York, $1415; 197, Williamson Brothers Company, Philadelphia, Pa., $1325; 214, Lidgerwood Mfg. Company, New York, $2225; 217, Mead-Morrison Mfg. Company, Cambridge, Mass., $1797; 225, J. B. Shannon Company, Philadelphia, Pa., $1080.

Class 123.—One pneumatic piston drill and one improved pneumatic chipping, caulking and beating hammer—Bidder 37, Chicago Pneumatic Tool Company, New York, $85; 59, Fairbanks Company, New York, $129; 89, Independent Pneumatic Tool Company, Chicago, Ill., $65; 91, Ingersoll-Rand Company, New York, $103.50 and $99; 137, Pittsburgh Pneumatic Tool Company, Canton, Ohio, $95; 161, Standard Railway Equipment Company, St. Louis, Mo., $104.

The following bids were opened November 5, Circular No. 467; item 1, four berm cranes, and item 2, four chamber cranes for the Isthmian Canal Commission:

Brown Hoisting Machinery Company, Cleveland, Ohio, item 1, $377,100; item 2, $195,300. Christiana Machine Company, Christiana, Pa., item 1, $226,648.50; item 2, $51,000, own specifications. Cleveland Crane & Car Company, Wickliffe, Ohio, item 1, $219,114; item 2, $120,720. J. M. Dodge Company, Nicetown, Philadelphia, Pa., item 1, $215,240; item 2, $99,296. Modern Steel Construction Company, Waukesha, Wis., item 1, $266,984; item 2, $94,796. Morgan Engineering Company, Alliance, Ohio, item 1, $332,700; item 2, $140,900. Shaw Electric Crane Company, Muskegon, Mich., item 1, $248,502; item 2, $158,340; Wellman-Seaver-Morgan Company, Cleveland, Ohio, item 1, $146,008; item 2, $90,384.

Awards have been made as follows for marine boilers for the Philippines under bids recently opened by the Depot Quartermaster, New York:

Vermilye & Power, New York, two 40-hp. boilers, $469 each; New Jersey Foundry & Machine Company, New York, six 50-hp. boilers, $435 each.

Ashes Disposal from Ships.

It may seem simpler to get rid of ashes from the power plant of a steamship than from any other plant. There is no question as to where to dump them; except when the vessel is in a shallow harbor or channel there is no objection to dropping the ashes any time. The problem is not where to dump them, but how. The ordinary and older schemes are two in number—hoisting the ashes to the deck and discharging them through chutes, and forcing them above the water line by a jet of water and discharging through a bent pipe. Noise and dirt are objections to the first, which are emphasized on passenger vessels. The second soils the side of the vessel and sometimes injures the cargo by letting in water when in a rolling sea, and in deep ships it requires too much power.

The latest ash removing system discharges the ashes directly through the bottom of the vessel, employing for the purpose what is known as an ash expeller. The ashes are dumped into a hopper leading to a crusher, in which the clinkers are broken up, and below the crusher is a revolving drum in a water tight casing, which at one point of its revolution admits the ashes by gravity, and when revolved a half revolution dumps them into a spout leading through the bottom of the vessel. That the water may not prevent the egress of the ashes, compressed air is admitted to the drum just before it is open for discharging and the ashes are forcibly expelled completely clear of the bottom of the vessel. There is no dirt, noise, danger of leaky joints, damage to cargo, or unpleasantness to the passengers, and, as has already been demonstrated, there is no scoring of the vessel or fouling of the stern bearings or the injection inlet.

Some of the later transatlantic liners have already been equipped with this apparatus, and the new battleships North Dakota and Delaware are to be equipped with it. England is also building three battleships in which ash expellers will be employed. A special advantage in the application of this apparatus to war vessels is that there is no trail of ashes left behind the vessel. When ashes are dumped over the side in calm weather there is evidence of them on the surface as long as 12 hr. after.

The Colonial Steel Company, Pittsburgh, operating a plant at Colona, Pa., manufacturing tool steel, announces that its line of composite brass and copper metal, which it has been making for some time, has been extended to cover the rolling of bars and wire with brass and copper coating, the same as in sheets.

The American Society of Mechanical Engineers.

The twenty-ninth annual meeting of the American Society of Mechanical Engineers will be held in the Engineering Societies Building, 29 West Thirty-ninth street, New York, December 1 to 4. The following programme is announced:

Tuesday, December 1.

Opening session, 8.45 p.m.—The president's address, "The Conservation Idea as Applied to the American Society of Mechanical Engineers," by M. L. Holman.

Social reunion.—The reading of the address will be followed by a social gathering, at which ladies will be especially welcome.

Wednesday, December 2.

Professional session, 9.30 a.m.—Annual business meeting. Reports of the Council, Tellers and Standing and Special committees. New business may be presented at this session. Papers: "The Engineer and the People," by Morris Llewellyn Cooke; "Aeronautics," by Major Geo. O. Squier, Acting Chief Signal Officer, U. S. A.

Professional session, 2 p.m.—Steam and power plant papers: "A Method of Obtaining Ratios of Specific Heat of Vapors," by A. R. Dodge; "The Total Heat of Saturated Steam," by Dr. Harvey N. Davis; "Fuel Economy Tests," by C. R. Weymouth; "An Automatic System for Firing Fuel Oil," by C. R. Weymouth.

Lecture on aeronautics at 8.15 p.m., by Lieut. Frank P. Lahm, of the Signal Corps, U. S. A., a member of the Aeronautical Board.

Thursday, December 3.

Professional session, 9.30 a.m.—Machine shop practice papers: "Efficiency Tests of Milling Machines and Milling Cutters," by A. L. De Leeuw; "Metal Cutting Tools Without Clearance," by James Hartness; "Interchangeable Involute Gear Tooth Systems," by Ralph E. Flanders; "Durability of Gears in Electric Railway Service," by Norman Litchfield; "Industrial Photography," by S. Ashton Hand.

Professional session, 2 p.m.—Miscellaneous papers: "Articulated Compound Locomotives," by C. J. Mellin; "Liquid Tachometers," by Amasa Trobridge; "Training Workmen," by H. L. Gantt; "An Averaging Instrument for Polar Diagrams," by Prof. W. F. Durand; "Salt Manufacture," by George B. Willcox.

Thursday, December 3.

Gas power section.—Simultaneous session, 2 p.m.—Business meeting. "Reminiscences of a Gas Engine Designer," by L. H. Nash; "Possibilities of the Gasoline Turbine," by Prof. F. C. Wagner.

Reception, at 9 p.m., to be held in the Engineering Societies Building. The president and president-elect will receive the members and guests in the auditorium.

Friday, December 4.

Professional session, 9.30 a.m.—Experimental data: "Physical Properties of Carbonic Acid and the Conditions of Its Economic Storage for Transportation," by Prof. R. T. Stewart; "The Slipping Point of Rolled Boiler Tube Joints," by O. P. Hood and Prof. G. L. Christensen; "Tests on Friction Clutches for Power Transmission," by Prof. Richard G. Dukes.

The United Sheet Steel Company, which is building a new plant at Mansfield, Ohio, for which Vollkommer & Co., Pittsburgh, are engineers, has awarded the following contracts: One structural steel building, 70 x 160 ft., with a 30-ft. and a 40-ft. leanto, to the Pittsburgh Bridge & Iron Works, Rochester, Pa.; four pairs furnaces, four sheet furnaces and two double annealing furnaces, for a four-mill plant, to Vollkommer & Hagan, furnace engineers and contractors, Pittsburgh. The boiler house will be 45 x 50 ft., and will contain Babcock & Wilcox water tube boilers, aggregating 730 hp., natural gas being used as fuel. Included in the equipment are a 75 kw. direct connected generator, a 20-ton electric traveling crane, heaters, pumps, &c. The plant is expected to be ready for operation about March 15.

The new blast furnace of the Ironton Iron Company, Ironton, Ohio, will be blown in this week.

HARDWARE

THE organization of the retail Hardware trade is fairly complete in the Central and Western States, where there are large and efficient associations. On the Pacific Coast, too, the movement has been eminently successful, with associations which are thoroughly representative of the best elements of the trade, in which the matter of organization appears to be carried out with remarkable detail and system with a view to the definite advancement of the interests of the trade. In the East, on the other hand, the movement languishes. New England and the Middle States, while constituting a splendid business territory, have not entered into the association movement with anything like the spirit which characterizes the West. In the South, also, there is much to be accomplished, but progress is being made as evidenced by the manner in which merchants are getting together and forming associations which are full of promise.

The organization of the retail Hardware associations has heretofore proceeded mainly along State lines, and, indeed, the small size of many of the States makes it difficult, if not impracticable, to bring together a sufficient number of Hardware merchants to make an organization which in membership can at all measure up to the great associations of the West. It is obviously inadvisable in such cases to attempt, as yet at least, to form separate State organizations. As the same time there is in the sections still unorganized abundant reason for the Hardware merchants getting together with a view, among other things, to the correction of trade abuses, from some of which their merchants suffer much more than do the merchants of the West. It is to be noted, too, that there is in them abundant material for good associations, as they have many enterprising, successful and up to date Hardwaremen who would give tone and character to the organizations and are capable of directing them along useful lines.

The need and the opportunity for doing good work in extending the movement have been recognized by the officers of the Pennsylvania Association who have opened the doors of that organization to the Hardware merchants of neighboring States. In taking this action it was held

> that, inasmuch as there were no State Hardware organizations in the adjacent States, nor in the District of Columbia, and inasmuch as these States and District were the immediate neighbors of Pennsylvania on the east and south, and that inasmuch as the vital business interests of every Hardwareman in this territory lay in a powerful, well organized and well developed Hardware Association, and inasmuch as from this field there is the possibility of constructing the greatest retail Hardware Association in the United States; therefore the Hardware trade of New Jersey, Delaware, Maryland, and the District of Columbia be invited to become members in full standing, being entitled to all the privileges, powers and advantages of this organization.

In connection with this invitation, which has already been extended by the secretary, attention is called to the fact that the next convention is to be held in Philadelphia in February, and that measures are now being adopted to make it a memorable occasion with an instructive and inspiring programme. This effort, we understand, has already been received with approval by many representative merchants to whose attention the matter has been brought, and it certainly deserves the active cooperation of the trade. In this way a great organization can be formed under the leadership of the Pennsylvania Association. If, however, there should be, as it is hoped there will be, a large membership from the adjacent States there would probably be no difficulty in changing the name, if this were thought desirable, so as to give it a broader scope and thus cover the entire territory. This, however, is in the future. If any of the States should develop strength enough to have a separate organization there would be no difficulty in subdividing. At the present time these questions do not come up. At this juncture there is opportunity for the merchants of the States named to enter at once into association relationship under peculiarly auspicious circumstances.

Condition of Trade.

There is no apparent necessity for important qualification in referring to the continued improvement in the Hardware trade. Some lines which have been weakest in price show a tendency to steady themselves or advance slightly, but, with the possible exception of brass and copper products, it seems unlikely that there will be a general uprush in the immediate future. This is a cause of congratulation, indicating, as it does, the healthfulness of the recovery, and promising that the improvement will be sustained. Belated declines are taking place in certain lines, and a few competitive reductions have manifested themselves here and there, but whereas a few months ago no concessions would stimulate buying, the present irregularities are likely to be seized upon by the larger trade as affording a favorable opportunity for filling up stocks. Not that the market is characterized by a large amount of speculative buying; stocks are merely being brought back to a normal basis—a much more desirable state of affairs. Purchases have so long been confined to immediate requirements that the return to confidence and a more liberal policy is most welcome to manufacturers. Few of them, however, show a disposition to take contracts running beyond January 1. With crops safely harvested, with the political situation cleared, with financial wounds healing and security prices steadily advancing, with capital being released and renewed confidence manifested in reviving activity and enterprise in many quarters, he would, indeed, be farsighted who could discern on the horizon a cloud seriously menacing our prosperity in the coming year. Two great Hardware organizations, national in scope, are holding this week their annual joint conventions. With many who attend, a primary object will be to broaden their view and get in closer touch with general conditions as reflected in other lines than those in which they are directly interested and other localities than their own. Last year at Atlantic City the feature of the meetings was a general discussion of the business outlook. The tone was one of attempted reassurance in the first gust of the storm. The situation was exemplified in the threateniug clouds and turbulent sea; the tide was going out. This year, in contrast, the outlook is to be discussed in a milder climate, on the banks of the lower Mississippi, and who shall say that in the smiling skies of sunny Tennessee and the broad

but placid onward sweep of the Father of Waters may be found a happy augury for our financial and commercial progress in the year to come?

Chicago.

Owing to the moderate rush of orders, composed in large part of held-up business, which came out immediately after election, the trade of last week was rather less active than that of the week preceding. This result, however, was discounted in pre-election forecasts and has no especial significance touching permanent developments. While rapid strides are not being made in the increase of business in its general volume, the outlook is one that invites a feeling of optimism respecting onward progress strengthened by the assurance that will safely lead to better things. Some lines of manufacture are gaining faster than others, but what deserves especial emphasis is the fact that none is losing ground. There is no disposition among the trade, either large or small, to buy speculatively in anticipation of a suddenly increased demand or higher prices, but there seems to be a little more latitude exercised in placing orders covering nearby requirements; in other words, orders are beginning to reflect the establishment of a greater degree of confidence, in the increased quantities specified. In several sections of the Middle West there is complaint of drought, which has interfered with the growth of winter grains, and is a source of much inconvenience in other respects. As is usually the case such conditions are not wholly without compensating benefits, one of which is seen in this instance in the better movement of drain Shovels and other Ditching Tools. Continued dry weather has made it possible to get into swamps and marshes for draining operations, which ordinarily are inaccessible except at great expense; the opportunities afforded by the drying up of such places are responsible for the considerable improvement noted in demand for Drain Tools. It is believed by the trade that the cheaper price named in the schedule announced for the coming season on Bronze Wire Cloth will result in more attention being given this trade, and consequently larger sales. In this, as in other lines, many customers are inclined to seek better qualities, and even the slight reduction made in Bronze Cloth will, it is thought, contribute to its popularity and increased sale. Dealers seem to favor the 50-ft. rolls in the Bronze and other higher priced cloth, since it enables them to carry an assortment of widths with a minimum investment. According to building statistics the prospects for new business from building operations is quite assuring. Permits for the construction of new buildings issued in the city of Chicago for the month of October represented 980 buildings at a total cost of $6,242,315, which exceeds the record for the corresponding period last year by $1,282,165.

Cleveland.

W. BINGHAM COMPANY.—Confidence, the keynote of business, is rapidly and rightfully assuming its position in the business world. As soon as the election was over orders that had been placed contingent upon the result, were immediately released. It is reported that the New York Central Lines alone have placed orders to the amount of over $30,000,000, and other railroads throughout the country have done likewise, so in the aggregate it is estimated that in the near future over $240,000,000 will be expended by different railroads in rehabilitating and putting their roads and equipment in shape to take care of the business they now have; also the large amount that they expect to come to them in the near future.

Many factories, mines and mills all over the country that have been idle for the past months are starting up. Really it is a cause of gratification and thankfulness to know that the people of the country have rid themselves of politics and have settled down to good, solid business.

The general Hardware trade in this section has taken on an impetus since the election that is really remarkable in its dimensions in so short a time. Orders for immediate shipment are growing larger every day, better quantities and larger assortments. Holiday goods are being more freely bought, and it looks as though we shall enter the new year with a larger amount of orders for spring shipment than we had last year in some lines, and the future trade looks bright and hopeful.

The prices on general Hardware are low at the present time, and with the demand which is on now and which will increase in the near future, we believe it behooves the trade generally to sort up liberally. There are many kinds of goods that certainly must advance from 10 to 20 per cent. over present prices, and we advise customers to place their orders at once for Poultry Netting, Wire Cloth, Lawn Mowers, Shovels, Spades, Hand Agricultural Tools, Rubber Lawn Hose and Accessories, Screen Doors and Windows and Accessories; in fact, they cannot miss ordering anything in the line of general Hardware.

We feel very optimistic as to our trade the balance of this year, and are very hopeful of the trade that we shall have during the coming year. We are glad that we can write so cheerfully for we feel exactly as we write, and all indications point to a bountiful trade from now on. We feel that we have left the "cross-roads" and are started on the "highway of old Prosperity Road."

St. Paul.

FARWELL, OZMUN, KIRK & CO.—There has been little of special interest in trade for the past month. Business has been fairly active and has run along in about the same way as it has done throughout the year. In fact, this uniformity in the year's business has been one of its most marked characteristics.

This uniformity during the fall has been kept up by the early marketing of grain, in which both the very favorable weather and also the heavy foreign demand for our surplus have played an important part. Minnesota autumns are generally fine, and the one we have just passed through has been one of the best. Farmers have been able to thresh and market their grain, to plow their land for the spring and to do an unusual amount of repair work in getting ready for winter.

These conditions have helped trade and collections, although doubtless the fact of farmers being so busy has kept them away from their trading centers more than the merchant would prefer to see. We are now up close to winter and trade will doubtless soon begin to fall off.

The country is pleased to have the election over. There has been generally as little excitement as can be expected in any presidential election, but still business was necessarily affected to some extent. There is more sentiment in business than we sometimes think, and none of us would choose a presidential election year as the most favorable time for business. It is over now, and we settle down to another four years' respite.

To the great body of business men the election of Mr. Taft is very satisfactory. He has been elected by the votes of democrats as well as republicans. Viewed from the standpoint of the business man Mr. Taft's election will have a healthy, stimulating effect on business. It insures a general policy of administration that is in accord with much the larger body of business men.

The tariff will be revised and also lowered to such extent as the requirements of the Federal Treasury will permit. In the treatment of corporations justice to all concerned may be expected. To all questions that may come before the country during the coming four years men believe that in so far as the influence of the president can reach them, it will be for good, and that he will bring to the consideration of every public question an equipment of mind and temperament as well as experience, that will insure a square deal for all, and a line of policy in general to be followed that will promote the prosperity of the whole country.

Baltimore.

CARLIN & FULTON.—The excitement over the election having subsided, the country generally is settling down to business, and the trade shows an inclination to order more frequently, though purchases as yet are not heavy. We look for a cautious hand to mouth policy for at least the balance of the year, until the lumber, mining and manufacturing interests of the country become more generally active.

The agricultural sections have always been, and are

now, in excellent condition, but the entire business of the country cannot depend upon agriculture alone, though it is its mainstay.

From all accounts manufacturers are anticipating a very heavy demand for their products and are making arrangements accordingly, and inasmuch as the railroads are beginning to purchase equipment and rails, all indications point toward a renewal of business activity, which means a steady market for manufactured goods.

St. Louis.

NORVELL-SHAPLEIGH HARDWARE COMPANY.—We do not indulge in political articles. In business, however, we must deal in facts. We try to give these facts as we see them.

The election is over. Since the election both the numbers and the size of our orders in dollars and cents have increased. We are very busy. Our sales increased over last year in September and we recorded another increase in October. In the first half of November we will make a very large increase over last year. We did not feel the full effects of the panic last year until the last half of November. Therefore these increases have been made over a good business last year.

It is evident many orders were held up pending the election. That is now out of the way and people are buying what they need. There is no doubt that there is a widespread feeling of confidence throughout the country. Wall Street is always the barometer. Stocks have advanced. Notable among these advances has been United States Steel common.

In the meantime, on account of the good feeling all round, also on account of the new era of high prices for farm products—high priced corn, high priced wheat, high priced hogs, &c.—we should, of course, have high priced Nails and Wire. Therefore we count on advances in these goods in the near future.

A good many laugh at our Christian Science friends; but there is, no doubt, good feeling and a feeling of confidence, and that "all is well along the Potomac" is an asset and can be capitalized. When one feels well the size of a dollar bill shrinks. When one feels a little blue the size of a dollar bill increases. The people are feeling well. Their dollar bills look small to them. They will now part with them easily. Presto! Why should prices not go up? Verily, the time of the harvest is here. All that is needed are the reapers.

Laying joking aside, there is a hardening of prices in many directions. A large number of manufacturers who are in position to be very well posted predict an enormous demand for Steel goods the coming spring. The wear and tear and consumption in a country like this are very great. For a year this has been going on without any repairs being made. All sorts of things have been used up. All kinds of makeshifts have been made. Good trucks have been taken from under the worn out box car and the good framework has been taken off the worn out trucks and placed on a good one. One good car has been made of two poor cars. But the cold fact remains that only one car exists where two cars existed before.

The hands of the purchasing agent have been tied by orders from headquarters. Specifications from the stock department have had cobwebs grow over them in the buying department.

Cash has piled up in banks because all were paying off and few were borrowing. This accumulated money has led to offerings at low rates of interest.

Now with no radical changes in sight it is only natural to conclude new enterprises will start. The American nation is too nervous to sit down much longer than one year with folded hands. The possibilities of the country are too great. With plenty of money in bank at low rates, active men with good credit cannot resist the golden opportunities that lie all round them. In the nature of present conditions business is bound to be good.

But how soon we forget the lessons of the past. Is it well to advance prices so rapidly? Is it well to be too greedy? Is it not better to handle the situation with more poise and deliberation? There are many problems to work out. There are many inequalities and unjust conditions to be adjusted. The Republican party has promised a revision of the tariff. Every man who knows anything in the Hardware line knows what unfair conditions are put upon the distributing trade and the consumers of this country by the tariff on many lines of our goods. We will watch with interest to see what is done by the Republican party on these lines and how long it takes to do it.

Next week our sister city of Memphis will entertain the conventions of the National Hardware Association and the American Hardware Manufacturers' Association. There will be a large gathering. Soon special trains will be speeding southward. All the great manufacturers and all the great jobbers in the Hardware line will be represented. We are sure the Hardwaremen of Memphis will do their part in extending royal entertainment to the makers and purveyors of Tin Pans, Padlocks and Rat Traps. Representatives of the National Retail Hardware Association will also be present.

We are sure we can say, without being accused of egotism, that this country has good reason to be proud of her Hardware manufacturers, of her Hardware jobbers and of her Hardware retail merchants.

Louisville.

BELKNAP HARDWARE & MFG. COMPANY.—After us the Deluge might have been written by all but one of the political parties whose names distended the ballots all over the country. That Deluge has made good its forecast in the rise of the tide of orders rolling in, and in general preparation for business, if not immediate, at least for the early part of the coming year. There is a firm opinion that nothing is going to be cheaper, and the chances are that some advances will be realized even in the staple articles. There is an excellent inquiry for everything made of Wire, Plain Wire, Fencing, Nails, &c.

The minor advances already made in raw materials and scrap, too, have made the mills put a higher appreciation on their holdings, which the knowing ones have been increasing during the time of apathy and dullness. The railroads are busy, not only with a growing tonnage, but by reason of the fact that the long drouth has practically put a stop to navigation and hardly anything bigger than a bar of Ivory soap has been able to float in the Ohio River for a couple of months.

There was a little rain a few nights ago, but hardly enough to induce the farmers to haul their wagons out of the creek beds where they have been standing to keep the tires from dropping off. Still it gave us ocular evidence that rain had not altogether ceased on the face of the earth, and the country was treated as early as yesterday to an appreciable fall of snow as far South as Tennessee. This is very early for cold weather, and will set the coal mines in operation and revive a somewhat languishing industry. They have had a great deal of complaint in Virginia, West Virginia, Kentucky and Tennessee now for several months.

The meeting of the Hardware manufacturers and of the National Hardware Association at Memphis during the coming week is, of course, an important function among Hardwaremen. We are counting on seeing some of our friends who are not seen in Louisville often enough. We have set our gins to catch them "comin' or gwine" as the case may be. This sounds a trifle ambiguous, possibly we had better say traps for bear—the game season is on.

Nashville.

GRAY & DUDLEY HARDWARE COMPANY.—The election is over, and whether all of us were, or were not for Taft, we are for him now. The Hardwaremen the country over are sitting steady in the boat, and the majority of them are rejoicing at Taft's election.

The manufacturers are happy. They are inspiring their representatives with confidence, and the same confidence will be injected into the jobber, thence to the dealer; in fact, the country over seems to have gotten an inspiration "via wireless."

Stocks are advancing. The cotton growers are asking higher prices, the tobacco growers are asking still higher prices, and they are going to realize some higher prices, too. In fact, the manufacturers are talking advances, and are showing some advances. The orders are

going to pour into them, and they will have still further grounds for advancing their prices.

For the past 60 days dealers while buying conservatively have not been so extremely conservative as during the six or eight months previous. They are assorting their stocks much better, though still buying in smaller quantities than they will naturally do from now on.

Somebody is turning money loose, too. Collections have shown much better during the past few weeks. The facts are, we have some faith, and we are pretty happy in that faith. If we have a howler in our midst, we will shoot him on sight.

Philadelphia.

SUPPLEE HARDWARE COMPANY.—The Hardware conventions which are being held this week at Memphis will afford a good opportunity to ascertain from the manufacturers and jobbers present what improvement in trade has taken place since the Presidential election. The uneasy waiting disposition which held trade in check quite largely from 30 to 45 days before the election raised an obstacle with not only the consumers of products, but naturally extended to the retail trade, and, of course, wholesale merchants and manufacturers were compelled to conduct business accordingly.

Recent conversation with some manufacturers shows they are now greatly encouraged. Their trade has considerably increased, some saying that their stock on hand was entirely sold and a number of their employees who had been laid off taken back to work. Several manufacturers have reported to the banks in which they make their deposits that orders have wonderfully increased, many of them for goods to be delivered after January 1, and others for immediate requirements. Some of the daily papers have printed interviews had with quite a number of manufacturers, many of whom stated that their trade had increased 20 to 30 per cent., and some have been cleaned out entirely of goods wanted for Christmas sales.

The crisis of the last year has really been less severe than any extending back to 1856. Look back and compare it with 1893. During the first year of the crisis beginning at that date the writer was called upon by a man who desired to have his son taken into our employ. The latter had had no experience in Hardware, but had lost his position with a manufacturer whose trade had decreased. The father said his two daughters, who were stenographers, were also thrown out of employment. Each of the daughters had received $10 a week and the son had received $12 per week. The father's salary had been reduced from $18 to $15 a week. The income of the family had thus been reduced from $50 to $15. Now, nothing like this has occurred during the past year, although we feel that some manufacturers who closed their works had it in mind, and as a result we have suffered more than would have been the case if they had not feared a repetition of former experiences.

Now, why is it that we are so quickly returning to normal conditions? Is it not owing to the wonderful trade throughout the country since 1900, brought about by the large crops harvested in all sections, especially in the West, and the prosperous financial conditions over the entire country as a result of which mortgages have been paid, and large sums of money saved by employees deposited largely with banks, trust companies, and especially savings banks.

The change to colder weather should now bring forward sales of goods required during midwinter.

Portland, Oregon.

FAILING-MCCALMAN COMPANY.—Since the election our business in this section has gone ahead with an apparent increase in volume, though, of course, it is too soon to be able to determine definitely. We can only say this, that lumbermen look for better prices, and the manufacturing plants are running full time, and, in fact, everything looks particularly "rosy." Whether this is merely temporary or permanent we, of course, cannot say, but to us here it looks permanent as far as the Pacific Northwest is concerned. We can see no symptoms which would indicate anything like a setback in the revival of prosperity. We may not be able to show such a big increase as some other sections of the country, but if this should be true the reason lies in the fact that all through the past year conditions in this territory have probably been better than they have been elsewhere, while for the last month before the election business in this territory was fully as good, if not better, than in the corresponding period of 1907.

NOTES ON PRICES.

Wire Nails.—Increased activity is noticed in the Wire Nail market, orders being placed more freely and specifications are received by the mills in good volume. Indications point to a larger output for November than for the previous month. These conditions result from returning confidence in a revival of trade and in the belief that there will be no reduction in prices. According to reports, regular prices are being maintained. Quotations are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

Carloads, to jobbers	$1.95
Carload lots to retail merchants	2.00
Less than carloads to jobbers	2.00
Less than carloads to retail merchants	2.10

New York.—Lack of activity in the local market is shown by a somewhat smaller distribution among retail merchants. Nails are being sold every day, but the demand is comparatively light. Nails are held on the basis of $2.30 per keg in small lots at store, but some sellers are occasionally inclined to shade this figure.

Chicago.—Business in Wire Nails is reported by the leading interest as fully up to normal in volume. All signs point not only to a sustained demand, but even to a gradual increase which is expected to bring the present month out ahead of October. The average daily booking of orders is now about equal to the mill capacity engaged. Prices are reported to be absolutely maintained. Quotations are as follows: $2.13 in car lots to jobbers, and $2.18 in car lots to retailers, with an advance of 5 cents for less than car lots from mills.

Pittsburgh.—We note an increasing demand for Wire Nails and specifications against contracts are coming in quite freely, so that present conditions in the trade are referred to by the manufacturers as being very satisfactory. The recent revival in the trade has made the impression strong that there will be absolutely no reduction in prices of Wire Nails, but possibly an advance later on should conditions warrant, and this is having the effect of causing buyers to place orders more freely, with the result that shipments by the mills for this month are far in excess of the same period in October. The market is very strong, and the mills advise us they are maintaining prices absolutely. Quotations for base sizes are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

Carloads, to jobbers	$1.95
Carload lots to retail merchants	2.00

Galvanized Nails are quoted at $1 over the price of the regular Nails.

Cut Nails.—While buying is restricted largely to present requirements, an improvement is reported in the volume of business, including new orders and specifications on contracts. The general price for Steel Cut Nails is $1.80, base, per keg, f.o.b. Pittsburgh, for less than carloads, and $1.75 for carloads and larger lots. In the Western market Iron Cut Nails are held at an advance of 10 cents per keg over Steel Cut Nails, but this differential is not observed in the East.

New York.—Demand for Cut Nails is about in the usual proportion to that of Wire Nails in the local market. Steel Cut Nails are held on the basis of $2.15 per keg for small lots at store, but this price is not strictly adhered to by all sellers.

Chicago.—There is some improvement noticeable in the demand for Cut Nails, both in the amount of new business offered and volume of specifications. Jobbers are ordering conservatively, though necessarily a little

more liberally than for some months. We quote Chicago prices as follows: In car lots to jobbers, Iron Cut Nails, $2.08; Steel Cut Nails, $1.98.

Pittsburgh.—In sympathy with conditions in the general Steel trade, demand for Cut Nails is showing betterment, both in new orders being booked by the mills and also in specifications on contracts. As yet the trade is buying largely for present requirements, but is showing some disposition to place more liberal orders. The general market is $1.80, base, per keg, f.o.b. Pittsburgh, but $1.75 is made on carloads and over. In the Western market Iron Cut Nails are held at an advance of 10 cents per keg over Steel Cut Nails, but this differential is not observed in the East.

Barb Wire.—Considering the lateness of the season, demand is fairly good, being stimulated by the continued mild weather. New business received by the mills is comparatively light, but specifications on contract orders are larger in volume. According to reports regular prices are being maintained. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Gal.
Jobbers, carload lots	$2.10	$2.40
Retailers, carload lots	2.15	2.45
Retailers, less than carload lots	2.25	2.55

Chicago.—Specifications against contracts are going forward at a good rate, and considering the season a fair amount of new business is being booked. In common with other forms of Fencing, the situation is, all things considered, fairly satisfactory in present results and prospective business. Quotations are as follows: Jobbers, Chicago, car lots, Painted, $2.28; Galvanized, $2.58; to retailers, car lots, Painted, $2.33; Galvanized, $2.63; retailers, less than car lots, Painted, $2.45; Galvanized, $2.75; Staples, bright, in car lots, $2.25; Galvanized, $2.55; car lots, to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

Pittsburgh.—The demand has been only fair for some time, but the continued mild weather is having the effect of bringing out some orders that otherwise would have gone over until next spring. The demand for spring trade in the Southern territory is expected to open next month or very early in January, when a material increase in orders is expected. The mills advise us that the market is firm, and that regular prices are being maintained. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Gal.
Jobbers, carload lots	$2.10	$2.40
Retailers, carload lots	2.15	2.45
Retailers, less than carload lots	2.25	2.55

Plain Wire.—A marked improvement in demand is evident from the amount of new business received by the mills from manufacturers of Wire Fencing, also in specifications on contracts. Prosperity in agricultural communities gives good ground for anticipating a large demand for Wire Fencing. Quotations per 100 lb. to jobbers in carload lots are as follows, on a basis of $1.80 for Plain and $2.10 for Galvanized, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days, the price to retailers being 5 cents additional:

Nos.	6 to 9	10	11	12&12½	13	14	15	16
Annealed	$1.80	1.85	1.90	1.95	2.05	2.15	2.25	2.35
Galvanized	2.10	2.15	2.20	2.25	2.35	2.45	2.85	2.95

Chicago.—Encouraged by the prospects of a good Fence trade, manufacturers are ordering more freely than for some time. In view of the prosperous condition of the agricultural communities there seems to be nothing in the way of a steadily growing demand, and dealers are exhibiting more confidence in anticipating requirements. It is stated that mill prices are being steadily maintained. We quote as follows: Car lots to jobbers, $1.98, f.o.b. Chicago, and to retailers, $2.05.

Pittsburgh.—A good deal of new business is being placed, and specifications against contracts are being very freely received by the mills. Fence manufacturers are more disposed to place orders ahead, and are anticipating a fair season. The general improvement in trade is reflected strongly in demand for Fence Wire, which so far this month has been quite active. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Gal.
Jobbers, carload lots	$2.10	$2.40
Retailers, carload lots	2.15	2.45
Retailers, less than carload lots	2.25	2.55

Bolts, Carriage, Machine, Etc.—An advance in Bolts approximating 5 per cent. was made last week by leading manufacturers who assert that their goods have been selling on an unreasonably low level, and that a moderately better price is justified by the improved demand. The market on average lots may now be represented by the following quotations:

	Discount.
Common Carriage Bolts, ⅜ x 6, smaller and shorter, cut thread	75 and 5 %
Common Carriage Bolts, ⅜ x 6, smaller and shorter, rolled thread	75, 10 and 5 %
Common Carriage Bolts, longer or larger than ⅜ x 6	70 and 5 %
Machine Bolts, ⅜ x 4 or shorter and smaller, with H. P. or C. P. Plain Nuts, cut thread	75 and 10 %
Machine Bolts, ⅜ x 4 or shorter and smaller, rolled thread	75, 10 and 5 %
Machine Bolts with H. P. or C. P. Plain Nuts, larger or longer than ⅜ x 4	70 and 10 %
Machine Bolts, all sizes, with C. & T. Nuts	70 %
Machine Bolt Blanks	70 and 10 %
Bolt Ends, with H. P. or C. T. Plain Nuts	70 and 10 %
Bolt Ends, with C. & T. Nuts	70 %
G. P. Coach Screws	80 %
Cone Point Lag Screws	80 and 5 %
Forged Set Screws	70 %
Tap Bolts	60 %

The following new price-list on Gimlet Point Coach Screws was adopted November 13, to take effect at once:

G. P. Coach Screws, Per 100.

Lengths. Inches.	⅝ in.	¾ in.	⅞ in.	1 in.
2	$6.00	....	....	....
2½	6.50	$9.20	....	....
3	7.00	9.90	$15.00	....
3½	7.50	10.60	16.00	$22.00
4	8.00	11.30	17.00	23.30
4½	8.50	12.00	18.00	24.60
5	9.00	12.70	19.00	25.90
5½	9.50	13.40	20.00	27.20
6	10.00	14.10	21.00	28.50
6½	10.50	14.80	22.00	29.80
7	11.00	15.50	23.00	31.10
7½	11.50	16.20	24.00	32.40
8	12.00	16.90	25.00	33.70
9	13.00	18.30	27.00	36.30
10	14.00	19.70	29.00	38.90
11	15.00	21.10	31.00	41.50
12	16.00	22.50	33.00	44.10

As will be noted in the above quotations, the market on Coach Screws may be represented by a discount from this list of 80 per cent.

Sash Weights.—There is a disposition evinced by some manufacturers of Sash Weights to look for an improvement in the market, based on the undoubted facts that raw material shows an upward tendency; that there is a noteworthy increase in projected building operations, leading to a better demand, and finally that larger buyers now show a willingness to increase their stocks. In a general way it may be stated that the extreme quotations of some founders are from 50 cents to $1 a ton higher than a short time ago. In many sections, however, prices are still kept down by the sharpness of competition, especially where one or two new manufacturers have come into the market.

Wire Screen Cloth.—In giving the new prices on Wire Screen Cloth in our last issue the price on Bronze Cloth was erroneously applied to 12-mesh. The quotation mentioned, $6.50 per 100 sq. ft., is for 14-mesh, which is the standard grade of Bronze Wire Cloth, and that usually quoted by manufacturers.

Conductor Pipe.—Recent advances in Sheet Copper are being reflected in Copper Conductor Pipe and Eaves Trough. Prices on these products are firm and in some cases have been withdrawn altogether, manufacturers quoting only on actual orders. It is believed that a material advance may take place at any time.

Copper and Brass Goods.—The market for Copper and Brass goods is much stronger, and further advances have been made in both classes of material. On the 16th inst. Sheet Brass was advanced to 16 cents, base, per pound, Brass Wire to 16¼ cents, base, Brass Rods to

16¼ cents, base, Brazed Brass Tubing to 22½ cents, base, Brass Seamless Tubing to 19 cents, base, and Tobin Bronze to 18 cents, base per pound. On the 13th Seamless Copper Tubing was moved up to 23 cents, base, and Copper Rivets and Burs are now 50 per cent. discount in fair lots.

Rivets.—On Structural and Boiler Rivets an advance of 10 cents per 100 lb. has been announced. The manufacturers' price on Structural Rivets is now $1.90 per 100 lb., and on Boiler Rivets $2 per 100 lb. No prices can be named to represent fairly quotations on Tinners' and Miscellaneous Rivets, which continue low and show irregularity approaching demoralization.

Nuts.—Simultaneously with the advance in Bolts, &c., an advance was made in Hot Pressed and Cold Punched Nuts, amounting to one-tenth on all varieties. The market may be quoted as follows:

	Off list.
Hot Pressed Square Nuts, blank or tapped	5.80
Hot Pressed Hexagon Nuts, blank or tapped	6.30
Cold Punched Plain Square Nuts, blank or tapped	5.30
Cold Punched Plain Hexagon Nuts, blank or tapped	5.90
Cold Punched C. T. & R. Square Nuts, blank or tapped	5.70
Cold Punched C. T. & R. Hexagon Nuts, blank or tapped	6.50

Window Glass.—From the manufacturers' viewpoint the situation is regarded as anything but encouraging. The formation of the manufacturers' selling organization is considered practically as good as abandoned, as the committee has failed to secure a large enough percentage of pot capacity to secure the necessary financial backing. It is estimated that there is now working nearly a 1700 pot hand operated capacity, which, with the output of the machine factories is looked upon as about twice the quantity of Glass the country is purchasing. Manufacturers as a rule find it difficult to meet their payrolls without offering inducements in the way of price to move their Glass, and it is believed that is often done at an actual loss. As far as can be seen there is no silver lining to the cloud overhanging the manufacturing part of the Glass business. If relief does not come in some form in the near future it is considered probable that the financially weak factories will have to close down. Manufacturers' quotations, both for hand operated and machine made Glass, from manufacturers' list, January 1, 1901, are 90 and 35 per cent. discount for single and 90 and 40 per cent. discount for double strength Glass. As before intimated, these discounts are not always adhered to by makers of hand made Glass. Minimum prices recommended by the Eastern Jobbers' Association from jobbers' list, October 1, 1903, are as follows: All sizes single and double strength Glass, covering territory east of Chicago, 90 and 20 per cent. discount. These prices are also more or less elastic, according to circumstances.

Rope.—A somewhat better feeling is evident in the Rope market, including more liberal orders and less of an inclination on the part of buyers to shop around for low prices. Manufacturers appear to be in a more complacent frame of mind, as most of them have worked off their high priced stock of fiber, the Cordage made from which has in most cases been sold at a loss. This they pocket and have purchased more raw material at the lower present cost. Manufacturers also seem less eager to make concessions in price to secure orders. The market is reasonably strong at the following quotations for Rope, 7-16 in. in diameter and larger, are as follows: Pure Manila, 8¾ to 9 cents; Pure Sisal, 6¾ to 7 cents. Mixed grades of both kinds grade down in price according to quality. Jute Rope, ¼-in. and up, No. 1, 6½ to 6¾ cents; No. 2, 6 to 6¼ cents.

Linseed Oil.—Under the stimulant of manipulation the Seed market has advanced 8¾ cents per bushel during the week under review. Prices of Oil have also been advanced, accompanied by a light demand, as is usual in the face of advances. Those who placed contracts for Oil previous to the recent advances are sending in specifications for shipment. Quotations for 5-barrel lots are as follows: State and Western Raw, 47 cents per gallon; City Raw, 48 cents per gallon. Boiled Oil is 1 cent advance on Raw.

Spirits Turpentine.—Business at this point during the week under review has been moderate. The market has not been regarded as strong at ruling prices, while some of the manufacturing interests who use Turpentine will close down next month for annual repairs. The New York market is represented by the following quotations: Oil Barrels, 41½ to 42 cents; Machine Made Barrels, 42 to 42½ cents per gallon.

The Gas Appliance Exposition.

THE exposition to be given in Chicago by the National Commercial Gas Association, with the co-operation of the American Gas Institute, from December 7 to 12, is developing into the most complete and comprehensive exhibit of gas appliance which has been seen in this country. The demand for space on the floor of the exposition has been so great that but little remains. An examination of the list of applicants shows a great diversity, and from the present indications practically every appliance known to gas users and gas companies will be on display.

The plans for illumination are very elaborate, and it is doubtful if any exposition hall has ever been so well lighted as will be the First Regiment Armory during the show. One of the difficult problems which is being solved by the Exposition Committee is that relating to the receipt and handling of exhibits and the placing of these exhibits in the spaces secured by the exhibitors. Arrangements are also being made for the proper pipe connections. This remarkable service, which has been undertaken by the committee for the exhibitor, will relieve him of an enormous amount of detail, but the aggregate responsibility thrown upon the committee is not light.

The most elaborate plans have been made and a contract entered into for the complete decoration of the interior of the armory. These decorations will be most beautiful. In this connection it is interesting to note that the contract provided that all decorations shall be absolutely fireproofed. The stringent rules regarding the decoration of individual booths which are made necessary by the nature of the exhibit, will be enforced, as the proper fireproofing of such decorations would be impossible, and further decorations of the hall and the charming completeness of the sections themselves will be not only sufficient, but as much as can properly be utilized from an artistic point of view.

Those who are considering the desirability of exhibiting are urged to put themselves immediately in touch with John C. D. Clark, chairman, Committee of Arrangements, 157 Michigan avenue, Chicago. The Gas Appliance Exposition is not promoted by outsiders, and is strictly an exposition of Gas Appliance under the jurisdiction and complete control of a committee composed of the two associations above named. The price charged per space is just enough to cover the expense of the exposition, and the committee of the associations is taking a very great burden and carrying it without compensation for the benefit of the industry as a whole.

THE BILLINGS & SPENCER COMPANY, Hartford, Conn., states that for the convenience of its customers in and around New York City, arrangements have been made to carry a large stock of the company's goods with Patterson, Gottfried & Hunter, Ltd., 211 Centre street. The company requests its patrons in the vicinity of New York to send orders direct to this New York house and they will be filled promptly at factory prices. All goods taken from this stock will be invoiced from the factory office in Hartford in the usual way.

IN noticing the establishment of several new connections with American manufacturers by C. K. Turner & Son, 116 Broad street, New York, in our last issue they were inadvertently alluded to as export commission merchants. The fact is that they represent directly American manufacturers and their business is solely with export commission merchants in this country, the firm doing no direct business abroad.

THE firm of Goddard & Owens, Braymer, Mo., Hardware and Tinware, has been succeeded by A. Wells & Son.

Correspondence.

Revision of Laws as to Restraint of Trade.

To the Editor: In your issue of the 12th inst. you refer to the necessity of some action by the Hardware Merchants and Manufacturers, who will meet in Memphis next week, in revising the laws regarding restraint of trade, so as to "permit such co-operation and agreements as are reasonable and necessary." This is a matter of considerable importance to all the merchants and manufacturers of the country and has been somewhat overlooked, because while the law as it stands, though declaring illegal all such combinations, has not been enforced against agreements that are on their face reasonable and necessary, it is nevertheless better that such agreements should be brought under the protection of the law and made legal. I understand that Seth Low, president of the Civic Federation, has drafted such a law, which has lately been submitted to President Roosevelt and meets his approval. The Hardware associations would do well to look into this proposed legislation, and if found satisfactory to give it their combined support.

It may interest your readers to know that on December 28, 1886, I read before a literary club of this city a paper on "Competition and Monopoly," which was published in the Rochester *Post Express* of April 25, 1887, at the request of the editor. After discussing the advantages and disadvantages of competition and monopoly both from an economic and social point of view, the following conclusion was reached:

> We therefore seem to be reduced to two alternatives for monopoly regulations, carefully guarded franchises or official commissions, and it is obvious that the first requires something in the nature of the second to see that the privileges granted are not overstepped. These commissions are growing in favor and seem to be the most efficient means yet devised for preventing the dangers of monopoly. Now these commissions are simply extensions of our judicial system applied to industrial organization and conditioning the methods of its working. Further, they leave the ownership of property in private hands, and therefore insure its most efficient and economical administration. And lastly, their work is in accord with what all schools recognize as the fundamental function of government, the administration of justice.

I do not wish to be understood as claiming any special originality for this conclusion, for my paper quotes from a number of well-known writers of political economy to sustain the contention that competition cannot be relied upon to regulate all kinds of business under modern conditions, and to prove that competition becomes a destructive force in a number of instances. I was particularly indebted to President (then professor) Arthur T. Hadley's book on "Railroad Transportation, Its History and Its Laws," published the year the paper was written, and to a couple of articles written by Prof. Henry C. Adams about the same time. My own contribution to the discussion consisted chiefly in calling attention to the fact that the beginning of the movement toward business combinations that has ended in the so-called trusts was to be found in the necessity for regulating what is known as "cut throat" competition. Those most vitally interested in the struggle—namely, competitors—were among the first to discern the evils of unregulated competition and to devise means for overcoming them. It is true that all these methods were planned for selfish ends and that consequently they each and all took one shape, monopoly, or attempts to create a monopoly, more or less complete.

Twenty-five years of business experience at that time and over 20 more added since have convinced me that if such trade agreements as I have referred to above had been early brought under the rule of law, instead of being either ignored or considered illegal, many of the evils that we are now trying to control by legislation might have been avoided. ROBERT MATHEWS.

ROCHESTER, N. Y., November 13, 1908.

SELAH B. STRONG has just been elected president of the Mallory-Wheeler Company, vice Russell Hotchkiss, who has resigned as president and director. Lewis D. Boggs, who has long been connected with the company, is vice-president, and Frank E. Sims, likewise an old employee of the company and its secretary, will assume the management of the factory at New Haven, Conn. Mr. Boggs as heretofore will make his headquarters in New York at 23 Warren street.

Price-Lists, Circulars, Etc.

Manufacturers in Hardware and related lines are requested to send us copies of catalogues, price-lists, &c., for our Catalogue Department in New York; and at the same time to call attention to any new goods or additions to their lines, of which appropriate mention will be made, besides the brief reference to the catalogue or price-list in this column.

G. WHITE AXE COMPANY, INC., Honesdale, Pa.: A folder entitled "Good and Bad Axes, How They Are Made," is devoted to a description of the company's Stub-and-Twist Axes.

WEST HAVEN MFG. COMPANY, New Haven, Conn.: Illustrated catalogue devoted to Hacksaw Blades and Frames, Plumbers' Hollow Mill Saws and two styles of Power Hack Saws.

BUTLER BROS., Chicago: Christmas edition of "Our Drummer" catalogue, referring to seasonable and especially to holiday goods, many of which are of interest to the Hardware trade. Some fancy articles and sets are offered in holly boxes, appropriate for Christmas gifts.

PIKE MFG. COMPANY, Pike, N. H.: Illustrated booklet of Pyko Grinders. These are shown in a number of styles; also a Pyko Foot Power Attachment.

RED JACKET MFG. COMPANY, Davenport, Iowa: Catalogue and price-list No. 37, devoted to Red Jacket Pumps, Cylinders and Supplies. The company's specialties include the Red Jacket So-Easy-to-Fix Pumps, Quick Repair and Never-Fail Cylinders.

GLEN MFG. COMPANY, Elwood City, Pa.: Catalogue No. 26, relating to Hartman Fence and Specialties, including Steel Picket and Crimped Picket Fences, Stockade Woven Wire Fence, with all Gates, Posts, Railings, Fittings, &c.; also Tree Guards, Hitching Posts, Panel Farm Fence and Wire Mats and Matting.

BONNEY VISE & TOOL WORKS, INC., 3011-3015 Chestnut street, Philadelphia, Pa.: 1909 catalogue illustrating Bonney Amateur Bench, Champion, Machinists', Farmers', Coachmakers' Vises; also Pipe, Combination, Adjustable S Nut and Pipe, Engineers', Alligator and Always-Ready Wrenches.

SOUTHINGTON HARDWARE COMPANY, successor to Southington Cutlery Company, Southington, Conn.; New York office, 42 Murray street: Illustrated catalogue relating to Curry Combs. The company has discarded numbers that have had but little sale and added some new patterns, making the whole line sellers in some section.

DREW ELEVATED CARRIER COMPANY, Waterloo, Wis.: Illustrated descriptive catalogue devoted to Automatic Carrier Systems, Manure Loaders, Stanchions, Galvanized Steel Tanks and Feeding Troughs, Barrel Carts, Feed Carriers and Grub Tank Heaters.

OMAR MOTOR COMPANY, Newark, N. Y.: Illustrated catalogue of Browniekar Motor Car for young people, with gasoline engine, the ignition of which is by jump spark from dry cells. The maximum speed is 10 miles an hour.

WHAT is designed to be one of the finest warehouses in the far West is being constructed at Salt Lake City, Utah, by the Salt Lake Hardware Company. The building will be of brick and concrete construction, 165 x 286 ft., five stories high. It will contain about 6 acres of floor space, and is to be equipped with modern facilities for handling light and heavy goods both in and out. Shipping platforms will accommodate eight carloads of merchandise which can be loaded or unloaded at the same time. In addition to this evidence of expansion the company is working on a large catalogue which it expects to have ready for distribution about March or April of next year.

Holiday Trade in the Hardware Store.

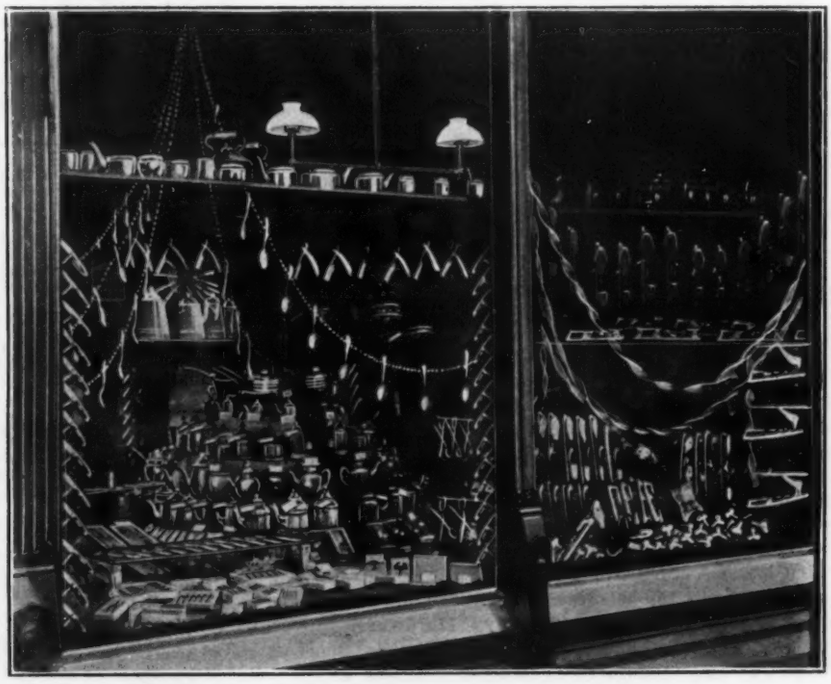
A Holiday or Fancy Goods Window.

A HOLIDAY WINDOW of fancy goods, installed a year ago by C. Morgan's Sons, Wilkes-Barre, Pa., is illustrated herewith. The scheme of the window was obtained by first arranging a border for the plate glass, so that the main display would be seen through a sort of frame. This was done by sticking Pocket Knives with open blades on both sides of the window frame, stringing a line of open Razors across the top and laying a rope of ground pine in the bottom. The steps shown in the right hand corner at the rear were built up to form a quarter circle, the mirror back and sides completing the illusion and showing a full circle. Brass Safety Chain was hung from the electric drop in the center to the four corners of the window, and on the festoons were fastened Silver Spoons and Knives. Brackets extended out from the window frames and were trimmed with Shears.

The bottom of the window was dressed with fancy silver pieces and sets in display boxes, Nut Picks, Carvers, &c. A plate glass shelf rests on four glass candlesticks, and is used for displaying Razors, Safety Razors, fine Pocket Knives and other small wares. A similar shelf resting on pedestals of mahogany was trimmed with Pearl Handled Table Knives. On the circular steps in the corner, already referred to, are Chafing Dishes, Tea and Coffee Pots, Tea Kettles, &c.

Referring to their window dressing methods, the firm finds that plate glass shelves can be used to good advantage in showing small wares, because they bring them near the line of vision of the passers-by. Another advantage is that they do not hide the rest of the trim, and they also relieve the flat appearance which would spoil the effect unless some elevated stands or false bottoms are used. Whenever possible the firm uses price cards, which it considers invaluable in a good window, making an illustrated price-list of what would otherwise be only a pretty arrangement of goods. People are always interested in prices, and goods are frequently sold by being marked, which otherwise would not even elicit an inquiry.

Summing up the firm acts on the theory that show windows should be as attractive as possible ,should be changed once a week, and should be dressed by that employee who has original and artistic ideas and is patient in their execution.



A Fancy Goods Window.

Inverted Gas Burners.

THE sale of Inverted Gas Burners having incandescent Mantles is steadily increasing, partly owing to the great progress made in perfecting the Burner, but more largely, perhaps, on account of the character of a shadowless light provided for reading and other general purposes.

This is a merchantable article easily handled by Hardwaremen, which can be made a source of profit wherever light is furnished by means of artificial or natural gas, in conjunction with goods more commonly recognized as Hardware stock.

The Inverted Burner is said to have first assumed practical form in Germany some years ago, and it has been widely adopted throughout Europe.

The Alton Mfg. Company, 99 Warren street, New York, claims credit as the pioneer in manufacturing and introducing this form of light in the United States, this company having adopted the German principles with such improvements as its skill and experience have proved desirable. The claims made for the Inverto Burner by its manufacturer are that it gives several times the illumination of the ordinary gas jet with a consumption of less gas and without shadow, flicker or sputter. Burners of this system may be readily attached to standard gas fixtures. They are easily lighted. Ceiling Protectors, Shades and Reflectors are said to be unnecessary, while there is a marked saving in the cost of Mantles.

The Memphis Conventions.

SPLENDID weather and a good attendance marked the opening of the annual conventions of the American Hardware Manufacturers' Association and National Hardware Association at Memphis, Tenn., on Wednesday morning. The initial session of the jobbers was something of a joint gathering, as the manufacturers on invitation took an active and conspicuous part in it and were present in considerable numbers. Both conventions will bring their deliberations to a close on Friday afternoon.

CHARLES M. GHRISKEY'S SONS, 506-508 Commerce street, Philadelphia, who will shortly celebrate their sixtieth anniversary in the wholesale Hardware business, and who have for a long time represented W. & S. Butcher, Sheffield, England, in the sale of Edge Tools, are now making particular efforts to promote the sale of these goods and will maintain at the above location a full stock of that concern's Plane Irons, Paring, Turning and Firmer Chisels and Gouges.

IN our last issue in referring to the sale of the Hardware business of W. A. Hutton & Co. to C. A. Whiteside and E. P. Dickerson, the address was incorrectly given as Gallatin, Texas, instead of Gallatin, Tenn. Mr. Hutton has removed to Nashville, Tenn., where the firm of McWhorter, Hutton & Co. has been organized for the purpose of engaging in the jobbing business in Hardware and related lines.

HIBBARD, SPENCER, BARTLETT & Co., Chicago, Ill., have issued an attractive cook book to aid their customers in the sale of O. V. B. Food and Meat Choppers. The book illustrates and describes the different sizes of the Chopper, and then supplies numerous receipts for the preparation of food with the Chopper.

Requests for Catalogues, Etc.

The trade is given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.

REQUESTS for catalogues, price-lists, quotations, &c., have been received from the following houses, with whom manufacturers may desire to communicate:

FROM THE MORROW-DREW COMPANY, purchasers of the Cox-Barnett Company's stock in Walla Walla, Wash., doing a wholesale and retail business in Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements and Sporting Goods.

FROM THE WENDELL HARDWARE & FURNITURE COMPANY, incorporated in Wendell, N. C., with a capital stock of $25,000 to do a retail business in Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Paints, Oils, Sporting Goods and Furniture.

FROM HOPKINS & SON, Delia, Kan., who carry a general line of Hardware, Stoves, Tinware, Agricultural Implements, Paints, Oils, Sporting Goods.

FROM F. M. SPEGAL, who is opening a Hardware store in Arnold, Neb.

FROM MCWHORTER, HUTTON & Co., 336 Public Square, Nashville, Tenn., who are about to embark in the jobbing business in Hardware and kindred lines.

FROM HOWES-KENDRICK COMPANY, 112 Market street, San Francisco, Cal., which has engaged in business as manufacturer's and purchasing agent. The members of the company are A. T. Kendrick, formerly manager of Kendrick Mercantile Company, Northport, Wash., and Hunter-Kendrick Company, Ltd., Greenwood, Grand Forks, Phœnix and Sandon, B. C., and W. B. Howes, formerly manager of Meisenheimer, Kendrick & Howes, Krupp, Wash. Branches will be opened in Seattle, Portland and Los Angeles.

FROM NEW STATE HARDWARE & HARNESS COMPANY, which has succeeded Noble Bros. & J. C. Preddy in Ardmore, Okla., in the wholesale and retail business. The company handles Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Paints, Oils, Sporting Goods. It also manufactures Saddles, Harness, &c.

FROM GEO. BREHM, who has purchased the business of R. J. Taliaferre, in Talmage, Neb., carrying Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Paints and Oils.

FROM REFIOR HARDWARE COMPANY, which will succeed the Refior-Barr Company in Ottawa, Ill., on December 1, and will carry a full line of Builders' Hardware, Mechanics' and Carpenters' Tools, a general line of Hardware, Guns, Ammunition, Factory and Mill Supplies, House Furnishings, Stoves, Farm Machinery, &c.

FROM J. W. HEFFNER, Barron, Wis., whose stock has been destroyed by fire. The goods included were Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Paints, Oils, Sporting Goods, Harness and Furniture.

FROM THOMPSON BROS., who succeed Samuel Barney in business in Washington, Kan., and will carry a stock of Shelf and Heavy Hardware, Stoves, Tinware, Paints and Sporting Goods, and will do furnace work and plumbing.

FROM THE KERFOOT-YANDEAU HARDWARE COMPANY, which succeeds the Kerfoot Hardware Company, Pasco, Wash. E. G. Kerfoot is president, Fred P. Yandeau, vice-president, and G. W. Kerfoot, secretary-treasurer. The company handles Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Paints, Oils and Sporting Goods. The company has put in new store fixtures and is increasing its stock of goods.

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Rural Parcel Post Offered as a Remedy for Colossal Deficit in Postal Revenues.

FROM OUR SPECIAL CORRESPONDENT.

WASHINGTON, D. C., November 17, 1908.

THE elections being out of the way, the administration of the Post Office Department has abandoned the policy of silence with regard to postal reforms which was maintained throughout the campaign, and the Postmaster-General is once more before the public with the project for a rural parcel post. This time it is offered as a remedy for the most colossal deficit in the postal revenues ever recorded in the history of the service, and it is safe to say that postal experts the world over will be amazed to find the United States Post Office Department seriously urging a parcel post—notoriously the most extravagant form of public expenditure ever authorized in any country—as a method of closing a wide gap between receipts and expenditures.

How the P. O. Department Would Make Up the Shortage.

The story of the department's project for bridging a $17,000,000 shortage is best told in the language of the official press bulletin recently issued from the Postmaster-General's office as follows:

Postmaster-General Meyer announced to-day that the postal deficit for the fiscal year ended June 30, 1908, amounted to $16,910,278.99. The receipts were $191,478,633.41 (being $7,893,657.84 greater than the previous year), and the expenditures $208,351,886.15. The deficit is the largest in the history of the Post Office Department. An analysis of the figures shows that $9,891,321.92 represent the advance in the rate of compensation authorized by Congress for employees of the railroad mail service, rural delivery service, city delivery service, and assistant postmasters and clerks in post offices. The normal increase in the revenue for several years was about 9 per cent. and in 1908 4.29 per cent., the falling off in the rate of growth being due to the financial disturbances of the year.

The Postmaster-General said that in his annual report he would call the attention of Congress to the fact that he is firmly convinced that the establishment of a special local post confined to rural routes would tend to wipe out the postal deficit and would finally make the rural delivery self-sustaining, besides being of convenience to the farmer and a boon to the retail country merchant. There are now in operation more than 39,000 rural routes, serving a population of about 18,000,000 people, and should an average of 55 lb. of merchandise be carried by the rural carrier on each trip throughout the year, it is estimated that $15,000,000 would be realized. The rate would be 5 cents for the first pound and 2 cents for each additional pound up to 11 lb., the maximum weight of a package. With the exception of a small percentage paid to postmasters of the fourth class for increased cancellations, all revenue from this parcel post would be clear gain, as there would be no railroad transportation whatever, the service being confined to packages mailed by bona fide merchants and patrons of the rural routes.

A Sanguine View.

The scheme for raising revenue through the conveyance of merchandise at reduced rates over the rural routes is not altogether a new one, although even the most sanguine postal official has never before ventured the suggestion that it would be possible to wipe out a $17,000,000 deficit thereby. Some of the fallacies in the arguments put forward in support of this project have heretofore been pointed out in this correspondence, but the comments were based upon the Postmaster-General's estimate, made a month ago, in which he calculated that an additional revenue of $8,652,000 could be obtained from a rural parcel post. As these calculations are all on paper, it is, of course, a simple matter to increase the amount of prospective revenue by multiplying it by two and thus closely approximating the last annual deficit of $17,000,000.

No Account Taken of Increased Equipment Necessary.

The most misleading factor in this equation is the assumption that new business on rural routes would automatically distribute itself evenly over all routes and throughout the week or month, thereby enabling the business to be done without increased equipment. This is, of course, preposterous, and when the slightest account is taken of the necessity for employing more horses, wagons and carriers, shortening existing routes and installing mail boxes capable of holding parcels of merchandise, the prospective additional revenue vanishes and leaves a deficit that dwarfs the current $17,000,000 shortage into insignificance.

National Grange Puts Itself on Record.

The activity of the National Grange, Patrons of Husbandry, in support of the rural parcel post scheme has been referred to in this correspondence from time to time, and during the past week has been reflected in the proceedings of the annual convention of the organization held in this city. In the course of his annual report to the convention the grand master made the following statement with regard to the bills now pending in Congress and the efforts of the Administration to secure their enactment:

In accordance with the plan of procedure in regard to legislation for the extension of parcel post facilities, outlined in my last annual report, two bills liberalizing the existing postal laws were introduced in Congress at the past session. One of these bills, introduced by Senator Burnham of New Hampshire, provided for a parcel delivery system, limited to the rural routes emanating from each local post office, and to the patrons of such office. The second bill, introduced by Senator Kean of New Jersey, applied to the entire postal service of the country, and provided for a reduction in the rate of postage on parcels sent through the mail from 16 to 12 cents per pound, and for an increase in the weight limit from 4 to 11 lb. Although these bills did not go as far as the Grange desires it was thought wise to accept them as measures tending in the right direction, and your Legislative Committee took action to bring the influence of the local Granges to bear on Congress in favor of their enactment. While the measures failed to become law, it is the opinion of the Senators and Representatives active in their support that the sentiment in their favor is so strong that they will be enacted at the coming session of Congress.

It has been announced by the Postmaster-General that the President has promised to recommend in his forthcoming annual message the authorization of an experimental parcel post on rural routes. Such action by the President will greatly strengthen the movement for this legislation, and from our experience with the rapid growth of the rural free delivery system from the small experimental appropriation of $40,000 in 1897, we can be certain that the establishment of a rural route parcel post will soon be followed by the adoption of a general parcel post law for the entire country.

The widespread opposition of certain selfish interests to legislation for this purpose has only served to bring out more clearly the benefits which it would confer, not only on the farmers, but on the people of the entire country, and the question is now admitted to be the most important, with one exception, of the issues before the National Legislature.

Postal Savings Banks Also Favored.

The grange also favors another project, the effect of which would undoubtedly be decidedly injurious to the small community—namely, the establishment of postal savings banks. In this connection the grand master said:

The unusual financial conditions which prevailed during a period of five or six months at the end of 1907 and the beginning of this year, when banks in all sections of the country either failed or suspended cash payments, served to direct public attention to the necessity for reforms in our banking system, and to show the importance of the Grange proposition for postal savings banks. That a method by which the savings of the people can be deposited in the post offices of the country with absolute security, drawing approximately the same rate of interest that can be realized on Government bonds, will be of great advantage to the farmers in districts remote from banking institutions, is self-evident. The enactment of legislation providing for this extension of the post office will be actively urged upon Congress at the coming session by the Postmaster-General, and in view of the favorable attitude of prominent Senators and Representatives of both political parties a bill for this purpose will assuredly become law in the near future.

While it is probable that the savings banks of the country would suffer greater loss as the result of the establishment of postal savings banks than would the national banks, yet in small communities the national banks now handle hundreds of millions of dollars annually that it is assumed would be turned over to the proposed postal banks, and the injury to the small community would be vastly greater proportionately than to the big cities where the institutions doing a practically exclusive savings business are located.

Defeat of Mr. Overstreet a Regrettable Incident.

The opponents of paternalistic postal schemes have just suffered a great loss in the defeat at the polls of Representative Overstreet of Indiana, chairman of the House Post Office Committee. Mr. Overstreet was one of the first public men to recognize the evils that would un-

questionably result should these fallacious projects be put into force, and he has consistently opposed them on all occasions. His retirement from Congress is in no way due to his attitude regarding these matters, but resulted from a blunder on the part of the election officials in his Congressional District, who placed his name on the same ticket with certain exceedingly unpopular local officials. The voters of the district were determined to bury these local candidates, and would not take the risk of marking their tickets in such a way as to accomplish their purpose and at the same time return Mr. Overstreet to Congress.

Rumors have been current within the past few days to the effect that Mr. Overstreet may be made First Assistant Postmaster-General when the Cabinet is reorganized next March, and the disquieting suggestion has been heard that the tender of this post to the Indiana Congressman is likely to depend upon the attitude shown by him toward the Administration's postal plans during the coming short session. It is inconceivable either that the Administration would attempt to make such a deal with Mr. Overstreet or that he would modify his well-known views in the slightest degree to secure any office in the gift of the President-elect.

HARDWARE FREIGHTS.

The New Uniform Bill of Lading.

A NEARER view of the provisions of the new uniform bill of lading shows that in the main it is a very satisfactory document. It has brought to a close a controversy that has been pending for a score of years, growing out of the effort of many of the railroads to evade liability for losses due to their own negligence. The bankers who at first opposed the new uniform document have decided, after careful deliberation, that it is a desirable improvement from their point of view, and it has even been intimated that they will insist upon its use where they advance funds against commodities in transit. Shipping interests which have been offering vigorous objections to the new document may become reconciled in the same manner as they become more familiar with its provisions.

Is It Binding Upon the Shipper as a Contract?

One perplexing question that has arisen is whether the new bill of lading is binding upon the shipper as a contract. The railroads require that it shall be signed by the shipper, as well as by the agent of the carrier, and it purports to be a mutual agreement or contract. To obtain the signature of the shipper the Eastern roads have adopted a coercive measure by filing with the Interstate Commerce Commission an amendment to the Official Classification, which provides that the rate shall be 10 per cent. higher if the shipper refuses to sign the document and accept all its provisions. There is, however, some question whether it is a contract or anything more than a carrier's receipt for the property, which may be binding in all its provisions on the carrier issuing it but not binding as a contract on the shipper.

No Legal "Consideration."

There is no legal "consideration" to make it a valid contract. The vital points in the relations between the parties are already settled and determined by law, leaving nothing material to form the basis of a mutual agreement. In an ocean bill of lading there is a valid consideration which makes it a contract between the parties. An ocean carrier may make any rate it pleases on any shipment, or by asking a prohibitory rate may refuse to accept any particular lot of goods. The amount of money which the shipper in an ocean bill of lading agrees to pay for the service to be performed forms a valid consideration.

A railroad, however, is forbidden by law to make any rate in a bill of lading for interstate shipment that differs from the lawful tariff. It is unlawful to accept property for interstate transportation unless a tariff has been filed at Washington for 30 days. The United States Supreme Court has held that on all interstate shipments the legal tariff rate, as shown by tariffs filed with the Interstate Commerce Commission, must be collected, regardless of any lower rate that may be stipulated in a bill of lading. It is evident, therefore, that the rate to be charged cannot form the consideration for a contract between the railroad and the shipper in interstate traffic.

Must Collect Lawful Tariff.

The acceptance of the property and the agreement to transport it to the destination desired by the shipper cannot be regarded as a consideration. The laws of the States from which the railroads hold their charters compel them to accept and transport property when offered them without discrimination, and the courts of several States have passed upon the fact that the railroad must forward each shipment in the order that it was received, excepting for the preference in movement which is allowed to perishable freight and live stock. The railroad, therefore, agrees to do only what it is compelled by law to do.

Railroad's Agreement Is a Compulsory One.

Nor does the railroad offer any consideration when it agrees to be liable for loss of damage, because the law already fixes this liability upon the carrier. The Hepburn law expressly forbids any contract, rule or regulation that would release the carrier from liability for loss or damage "caused" by it. This provision covers all but a very small and unusual fraction of the losses that occur in transit. Congress has not specifically fixed liability for fire loss, which may arise from an unknown cause, but in the absence of specific national legislation the rulings of the Federal Courts are binding. In many decisions these courts have held the carrier liable for fire loss regardless of contrary provisions in bills of lading.

Liability for Loss or Damage.

The common law which is followed by the courts on interstate shipments makes the carrier liable for any loss or damage unless caused by an act of God, the Government, the public enemy, riots, the act or default of the shipper, or an inherent vice or defect of the property. It will be observed that the new bill of lading conforms exactly to the rule of the common law as interpreted by American courts. There is no material point in the new document in which the railroad does not assume its full common law liability. Counsel for shipping interests, after having gone over the question carefully, are unable to see wherein an essay on the legal obligations of a common carrier can be erected into a contract between the carrier and the shipper, however useful the essay or definition of the law may be in general practice.

Conforms to the Rule of the Common Law.

There are possibly two miner points in which the carriers assume in the new bill of lading a greater liability than is imposed by the common law. On less than carload shipments going to freight houses and on cars going to team tracks the new bill of lading makes the railroad liable as a common carrier until 48 hr. after notice of arrival has been duly sent or given. Under the common law the liability as a common carrier ceases upon arrival at destination and the carrier becomes a "warehouseman," leaving upon the shipper, after arrival, the risk of fire and certain other losses. This is an important advantage to less than carload and team track shippers or consignees, but it does not affect industrial freight moving between private sidings.

Freight House and Team Track Shipments.

It is also stated upon authority of eminent counsel that there are certain remote and unusual fire losses for which the railroad is not liable under the common law, such as in conflagrations or fires originating outside of railroad property and spreading to freight houses or freight in transit. The new bill of lading makes no exceptions in the liability for fire unless the property is stopped in transit on the order of the shipper. There is no mutual consideration in the bill of lading for this liability assumed by the railroads in excess of that required by law. It is true the shipper is required to file

Liability for Fire Losses.

claims for loss or damage within four months, while the laws of the States have allowed several years, but a relatively few shippers are interested in this clause or suffer any hardship by it, and they as a rule are not the class of shippers who profit by the additional liability assumed by the carrier. If the status of the bill of lading as a contract rested upon these points, it would amount to Peter offering a consideration for the benefit of Paul.

A Very Satisfactory Document.

Whether the new bill of lading is a contract or an essay, it will be found a very satisfactory document, and it reflects honor on the raidroad men and shippers and their counsel who have labored long to harmonize their conflicting views. It will save trouble and confusion by making the law clear to the multitude of smaller shippers who cannot incur legal expense in all the petty controversies that might arise. If the railroads insist upon having the signature of the shipper, there is no serious objection to signing it. The coercive requirement that the rate will be 10 per cent. higher unless it is signed would seem to be superfluous, because any shipper who pays the 10 per cent. may find that the common law liability for which he pay the additional charge is less than the liability assumed by the carrier in the uniform bill of lading. It is difficult to understand why the 10 per cent. rule has been promulgated. If it is intended to create an arbitrary "consideration" between the carrier and the shipper, it would seem to work in the wrong direction.

A Suggestion as to Shipments with Freight Allowed to Destination.

To the Editor: Noting your articles on Hardware freights one thought occurs to me that may be of some use along this line. Many manufacturers ship largely direct to the Hardware trade, and in many cases the goods so shipped are sold with freight allowed to destination, and this freight is deducted from the invoice.

Manufacturer Must Know.

In deducting freight the manufacturer shows on his invoice the shipping weight of the shipment, the correct rate per hundredweight and the amount that the merchant should pay for freight. This the manufacturer can do as he must of necessity know all the time the proper classification and rate of the products of his factory, and must keep up to date on all changes, both of classification and rate made by the railroad companies.

Merchant Should Insist.

In many cases we find the merchant pays no attention to the amount of freight deducted, but goes ahead and pays any amount the railroad company may present, and then makes a claim on the factory for this overcharge; whereas, if he would insist on the railroads correcting their charges before he paid his freight, so that they would correspond with the freight deducted, he would save a great deal of annoyance to the manufacturer and himself as well.

Joint Action.

We are also of the opinion that careful consideration and joint action between the various Hardware associations and the manufacturers, through proper joint freight committees working with the railroad classification committees with a view of adjusting fairly the rates and classifications on Hardware commodities, is a step in the right direction.

OHIO MANUFACTURER.

E. C. Atkins & Co.'s Canadian Plant.

IN view of the rapidly increasing demand for their Saws from Canada, E. C. Atkins & Co., Indianapolis, Ind., have established a plant at Hamilton, Ont. The property owned by the company comprises more than 15 acres of ground in a desirable location, on which a number of buildings admirably adapted for the manufacture of Saws have been erected.

The plant has been fully equipped with the Atkins' special Saw making machinery, similar to the main factory at Indianapolis. The same processes being used, together with similar formula for the manufacture of steel, assures for the Canadian factory an equally high quality of Saws. The new company will manufacture a complete line of Saws for all purposes, including Band, Circular, Drag, Edger, Barrel, Re-Saw and all types of Milling Saws, together with Hand, Cross Cut and a full assortment of Small Saws. The company is employing at the start about 200 men, and will increase this force as circumstances warrant.

A new company has been formed for the Canadian department, which will be operated as E. C. Atkins & Co., Ltd. All the stock of the new concern will be held by the present owners of E. C. Atkins & Co., Inc., Indianapolis. The officers of the new company are as follows: H. C. Atkins, president; N. A. Gladding, vice-president and secretary; M. A. Potter, treasurer; F. C. Gardner, assistant treasurer; H. P. Hubbard, general manager, and C. D. Ten Eyck, sales manager. Mr. Hubbard, manager of the new concern, is a man of broad experience in Saw manufacture, and was formerly superintendent of the Indianapolis plant. Mr. Ten Eyck has represented the Atkins' company throughout Canada for a number of years and is well known to the trade.

LARGE CONSUMERS DEMAND PROTECTION IN BUYING PAINT.

A FEATURE of the annual convention of the National Paint, Oil and Varnish Association, held in Boston a few weeks ago, was the address of Charles Van Syckle, president of the International Association of Master House Painters and Decorators of the United States and Canada. Mr. Van Syckle spoke as the representative of the large consumers and referred to several live topics which command the attention of the trade. His principal plea was that lower prices be accorded to the large consumers than are given to the general public, his position being that the present margin of profit allowed to the painter is too small. He plainly suggested that under the conditions now prevailing master painters would be forced to resort to buying in clubs and thus discontinuing purchases through the jobbing trade. Touching on this point, he spoke in part as follows:

I know that there are members of your convention who are to a certain extent dependent upon the master painter for the bulk of their sales. We have heard said, and I think it is true, that the master painter uses perhaps 90 per cent. of the materials which many of you make. Some of you sell direct to the master painter and some to him through the jobber. I think that you all have the interest of the jobber at heart, as well as the interest of the manufacturer, and I want to say to you that the methods that are adopted by many of the manufacturers have this tendency. Within the last year—perhaps we might go a little further back of that; but at any rate I can be safe in saying that within the last year—there has been put forward the idea of forming buyers' clubs. The idea has been that if there is no other way of getting a better profit out of the goods which we handle and sell than the present one, the next best thing we can do will be to form ourselves into buyers' clubs.

If that is done, what will become of the middleman, your jobber? I do not think that we have at any time asked anything that was unreasonable or unjust. If we have done so, and anybody, any one of your membership, can point out to us wherein we are wrong in this matter, I am sure we will undertake to modify our ideas and our demands.

Pure Paint Legislation.

In regard to pure paint legislation, he took the position that the master painters made no unreasonable demands, but felt that laws could be enacted which would insure the purchaser of paint fair value for his money. He said in part:

Our position in the beginning was simply one in which we wished to be protected against the habit of mislabeling. We simply wanted to be able to buy in a package what was supposed to be there; and we found after meeting with some of the gentlemen of the organization connected with yours that for reasons best known to themselves would not be satisfactory to them. The argument used was that then certain standards would be taken as denoting pure, and anybody who did not use those standards would be compelled to label their goods, while those who used the certain specified standards would be enabled to send out their packages without these objectionable analyses. I do not pretend to say what are the exact ingredients of the best Paint materials that are made. I will leave that to some one else; but, as I said before, I do feel that there will be no injustice whatever done to anybody if by some fair middle ground laws can be enacted which will enable us to buy or to get what we pay for, and nothing else.

Dillard's Patent Cross Cut Saw Handles.

The W. E. Dillard Mfg. Company, Petersburg, Va., is manufacturing four styles of Cross Cut Saw Handles, three of these having patented features. All the handles are referred to as having irons of the best malleable iron, pins of steel, and Virginia hickory and oak handles. They are reversible and are warranted not to spring open or break. One style of handle has a double clasp which engages both holes of a saw.

Champion Egg Beater.

The Reid-Edelmuth Mfg. Company, 17-19 Ninth street, Brooklyn, N. Y., J. C. Smart sales manager, Irving Building, 1 and 2 Hudson street, New York, is introducing its line of Champion brand goods, one of which is the Cham-

Two Views of Champion Egg Beater.

pion egg beater here illustrated. Two views are given, the one at right being cut away to show the interior construction. The parts consist of a heavy tin cylinder, having a conical base. To the lowest end of the dasher is attached a perforated tin cone. By moving the dasher up and down the material to be whipped or beaten is forced through the holes in the cone, thereby beating the material thoroughly and quickly by means of the resulting air suction. The beater is made in 1, 2, 3 and 4 pint sizes, and is recommended by the company for beating, mixing or whipping such materials as eggs, cream, custards, frozen desserts, mayonnaise dressings, batters, egg nogg, omelets, as well as for churning butter or freezing ice cream.

Stanley's Screen Door Hardware.

The Stanley Works, New Britain, Conn., and 79 Chambers street, New York, has just put on the market two

Fig. 1.—Stanley's Screen Door Hardware Set No. 1750.

new sets of screen door hardware, as here illustrated. Fig. 1 shows set No. 1750, consisting of one pair of ornamental wrought steel loose pin butts, 3 x 3, to screw on

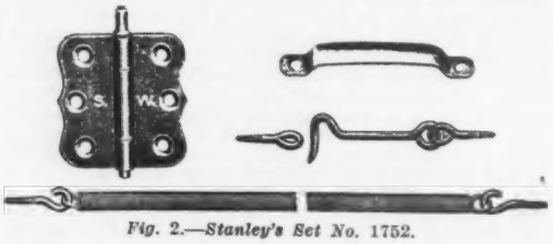


Fig. 2.—Stanley's Set No. 1752.

the surface; one wrought steel pull, 5 in. long; one wire spring, and one gate hook and eye. The spring is a No. 3 and of high grade, carefully tested. Fig. 2, set No. 1752, is somewhat lower in price than the No. 1750 and consists of one pair ornamental wrought steel loose pin butts, 2½ x 2½ in.; one wrought steel pull, 3½ in. long; one wire spring, No. 2, and one gate hook and eye. Both sets are Japan finished, packed complete with screws to match in a neat pasteboard box, and 12 sets in a carton. For higher grades of screen work the goods can be supplied in antique copper or brass finishes at a slight advance in price. Doors may be removed at end of season by simply removing butt pin and disconnecting spring.

The Astrophone Razor Stropper.

F. Alfred Reichardt & Co., 63 Barclay street, New York, are putting on the market a novel razor stropper here illustrated. Fig. 1 shows the stropper with the aluminum handle inserted in center of wood block ready for use, there being a similar center slot lengthwise of the block in which to insert handle for compact packing.

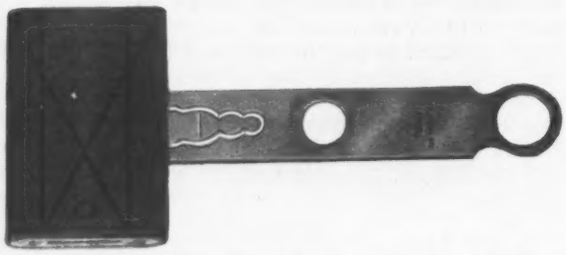


Fig. 1.—The Astrophone Razor Stropper, Removable Handle.

The wood block, 3¼ x 2¼ x ⅝ in., is covered on each side and both ends with selected leather of substantial body, each side of which is impregnated with different compounds; black and tan, respectively, in color. The removable aluminum handle is 7 x 1 x 1-16 in., and a tongue is punched near the upper end of handle, which, springlike, serves to hold the block firmly. A circle in it below indicates where the thumb should rest when stropping. The correct method of stropping, as to direction, is made obvious in Figs. 2 and 3, by means of the lines in the first stropping on the black side, placed there more for novices in the art than experts. All sharpening on

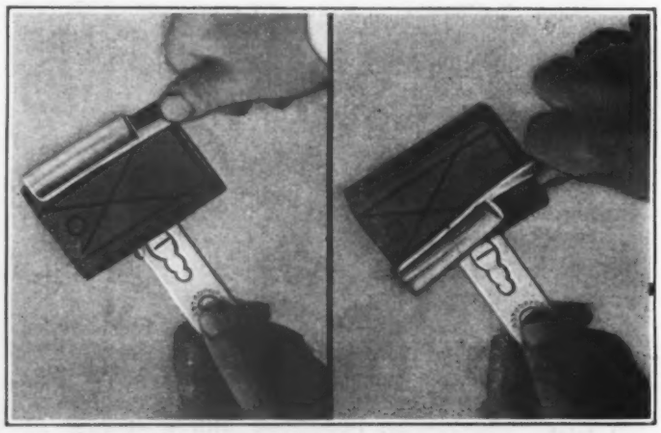


Fig. 2.—First Stroke in Stropping. *Fig. 3.—Finishing Stroke on Dark Side.*

the stropper should be done from left to right, with the upper stroke downward and opposite stroke upward, each diagonally across the block, as indicated by the slanting lines, detailed directions for which accompany each strop. The first operation is on the black side, placing the back of razor along upper straight line, so that the rounded edge of the block fits in the hollow ground blade, which is then drawn to the right downward along the diagonal line, not changing the position of the razor. A similar operation reversed, Fig. 3, completes the process on that side. The lines are not reproduced on the finishing or tan side of block, although the movement is the same, but of a finishing character. Each stropper is neatly packed in a compact double pasteboard box, 6½ x 2½ x ¾ in. in convenient form for carrying.

The Crystal Ice Cream Freezer.

The J. B. Foote Foundry Company, Fredericktown, Ohio, is offering the Ice Cream Freezer, shown herewith. The freezer is comparatively small in diameter, and tall, so as to allow a large amount of cream to be exposed to the ice at one time. It is pointed out that the cream thus freeezs quickly and that when packed after it is frozen it remains firm through and through. The can revolves from right to left, the dasher from left to right. As these rapidly revolve the freezing mixture is removed from the sides of the can by the wooden scrapers, and thrown to the center, where it is beaten by the egg-

The Crystal Ice Cream Freezer.

shaped floats, and the action repeated over and over again, until it is evenly and thoroughly frozen. All gearing is enclosed separate from the freezer, the gear frame being fastened to the tub by a button and tub ear, which permits the frame to be easily removed when desired. The castings are referred to as being carefully machined, all parts that come in contact with the cream are heavily coated with pure block tin, and all outside parts are well galvanized, so as not to rust. It is explained that the tubs are extra heavy, full size, wrapped in black hardware paper and attractively labeled. The freezers are furnished in 1, 2, 3, 4, 6, 8, 10, 12, 15, and 20 quart sizes.

A Double Eye Asphalt Mattock.

Hubbard & Co., Pittsburgh, Pa., are offering the new double eye Asphalt Mattock, shown herewith. The tool is made from special refined high-grade steel, carefully tempered, and is guaranteed by the manufacturers to cut any asphalt in the coldest weather. In size it is 20 in. long, 3¼ in. bits, and it weighs 11 lb., which is found to be the right weight for all around service. As a result of the double eye construction, should the edges become dull at both ends, the operator simply withdraws

A Double Eye Asphalt Mattock.

the handle and inserts it at the other end, the eye being swelled in the center sufficiently to hold the handle rigidly, which doubles the life of the tool.

The Can't Roll Plumb Bob.

The plumb bob shown herewith has the advantage of not rolling when laid down, and is made in two sizes, Nos. 10 and 20, each 3¾ in. long. Both are made of hexagon steel, with a screw plug in the top, through which the cord passes, being held in place by a knob in the end. No. 10 is made from ⅞-in. steel, and weighs 7 oz., and No. 20 is made from 1⅛-in. steel, and weighs 11 oz. Both are finely finished, polished and nickeled on a heavy copper plate. The plumb bobs are put on the

The Can't Roll Plumb Bob.

market by the Dikeman Mfg. Company, South Norwalk, Conn.

The Savage Automatic Pistol.

The Savage Arms Company, Utica, N. Y., has perfected the .32 caliber 10-shot automatic pistol, herewith

Fig. 1.—The Savage Automatic Pistol.

shown. It weighs 19 oz., measuring 6½ in. over all, and fires 10 shots as fast as a man can pull the trigger. Each bullet and its gases, it is explained, have the barrel to

Fig. 2.—Manner of Disassembling the Savage Automatic Pistol.

themselves, the bullet automatically locking the breech during the infinitesimal period of time the bullet is in the passage, the full force of all the gases thus being secured for the bullet during discharge, and leaving it again free when out of the barrel. The pistol is constructed to use the recoil of the gases remaining after the bullet leaves the barrel to operate the action—that is, to eject the shell and bring the next cartridge into position to cock the hammer. The pistol is so arranged that a cartridge may be carried in the chamber ready for action, either with the hammer down or at full cock, locked by the safety device. The hammer or cocking lever may be cocked at will, without operating any other part of the mechanism. It is impossible, it is shown, to discharge the pistol except by pulling the trigger; so that a blow on the exposed hammer or cocking lever will not discharge it, and the safety device locks the entire mechanism if

desired. It is referred to as having few parts, and as being simple in construction. The pistol disassembles by hand, without the aid of tools, as shown in Fig. 2. There is not a screw which might work loose, only spiral springs being employed to insure freedom from breakage.

Schroeter's Power Grater No. 3500.

Exterior and interior views of a machine primarily designed for grating horse-radish, introduced by Schroeter Bros. Hardware Company, 717-719 Washington avenue, St. Louis, Mo., are given herewith. The grater is constructed of wood, except the grating drum, the sides of which are disks of iron bolted together, over which the

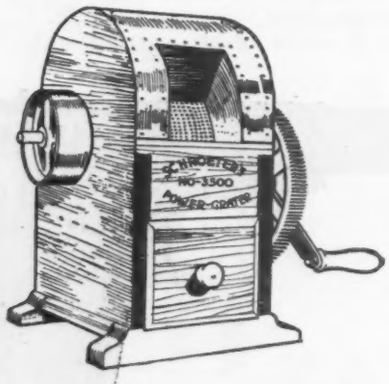


Fig. 1.—Schroeter's Power Grater No. 3500.

company's patent double grating drum is riveted. The extra weight in the iron disks causes the drum to act as a flywheel, thereby gaining a high speed when operating. The outside of the double drum is perforated and the inside is not, the object in having the drum double being to prevent the grated material coming through the holes in long, stringy shape. It is explained that horse-radish grated in the machine will be light, short and flaky, and unlike the horse-radish put through a meat chopper. Besides horse-radish, it is pointed out, the machine will grate equally as well cocoanut, potatoes,

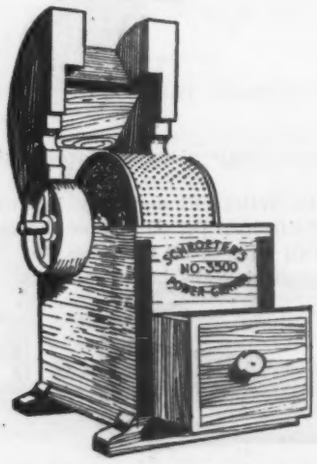


Fig. 2.—Interior of Schroeter's Grater.

bread, turnips, carrots and vegetables of all kinds. The grater can be operated by electric motor, steam or gasoline engine or other power, and is designed for use by those making a business of selling grated horse-radish or by hotels and large restaurants. The machine is furnished with gearing for hand power only, with gearing for hand power and pulley for steam or motor power, or with pulley only, for steam or motor power. The grater weighs 52 lb.

Hart's Pocket Safety Razor.

The Hart Mfg. Company, Unionville, Conn., is putting on the market the pocket safety razor illustrated herewith. Fig. 1 shows the razor with the handle slipped over the blade, to protect it, while Fig. 2 represents the flanged end of the handle fastened in a slot on the back

Fig. 1.—Hart's Pocket Safety Razor Closed.

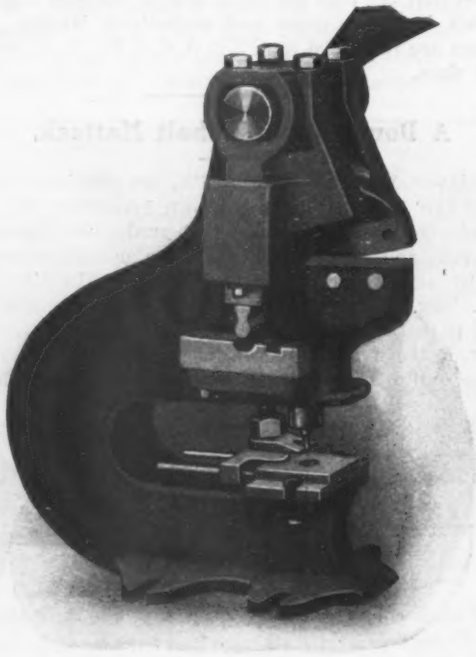
of the blade holder, ready for use. There are but three pieces, the blade holder, the blade, and the handle. When closed, as in Fig. 1, the razor measures ⅞ in. in width and 1¾ in. in length, suitable for carrying in the vest

Fig. 2.—Hart's Pocket Safety Razor Ready for Use.

pocket. The frame and handle are nickel plated and polished, and with six blades are packed in a small leatherette box.

Victor No. 3 Punch, Shear and Bender.

A handy tool for all round work in small metal working shops is a new combination hand punch, shear and bending machine made by the Nappanee Iron Works, Nappanee, Ind., and shown in the accompanying illustration. The machine is compact and is constructed with few moving parts. All three operations are controlled by a solid steel eccentric connected to the plunger, with a mortise having a 1½ in. bearing. This design does



Victor No. 3 Punch, Shear and Bender.

away with the use of pins, which are liable to become loose through wear. The bending block is attached to the side of the frame, and the hand lever is arranged to permit all work to be done from the front. Gibs are provided to take up the wear on the punch and shearing blades, and the punches are so arranged that worn and broken ones can be replaced at slight expense. The machine has a capacity for cutting wrought iron or soft steel bars ¼ x 1½ in., punches ¼-in. holes in ¼-in. plate, bends bars 3-16 in. thick. The shipping weight is 175 lb.

Patented Screw Hole for Signs.

The Ingram-Richardson Mfg. Company, Beaver Falls, Pa., manufacturer of porcelain enameled iron signs for all purposes, has introduced the new patented screw hole shown in Fig. 1, which is now used in all its signs. The flanged collar around the hole prevents the screw head coming in contact with the enamel surface. This not alone does away with the washer, but keeps the enamel from chipping around the screw hole. The use of leather washers formerly furnished by the company to prevent screw heads coming in contact with the enamel is shown in Fig. 2. When the washers were not used by the purchasers of signs, as was often the case, the contraction and expansion of the iron would have a tendency to crack the enamel around the screw hole

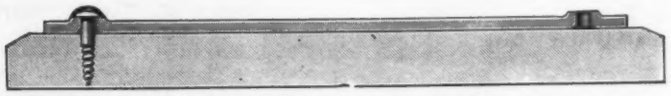


Fig. 1.—New Screw Hole for Signs.

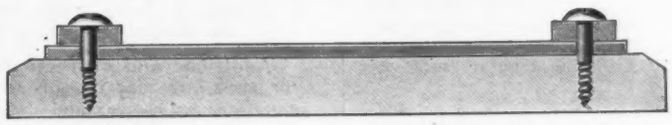


Fig. 2.—Old Style Screw Hole with Washers.

PAINTS, OILS AND COLORS

Animal, Fish and Vegetable Oils—

	℔ gal. bbls.
Linseed, Western, Raw	.46 @47
State, Raw	.46 @47
City, Raw	.46 @47
Boiled, 1¢ ℔ gal. advance on Raw.	
Raw, Calcutta, in bbls	.70 @..
Lard, Prime, Winter	.72 @76
Extra No. 1	.51 @52
No. 1	.49 @50
Cotton-seed, Crude, f.o.b. mill	.30 @31
Summer Yellow, prime	.38½@39
Summer, White	.45 @47
Yellow Winter	.44 @46
Tallow, Acidless	.58 @69
Menhaden, Brown, Strained	.34 @35
Northern Crude	.27 @30
Southern	.23½@..
Light Strained	.34 @35
Bleached Winter	.36 @38
Ex. Bleached Winter	.38 @39
Cocoanut, Ceylon	℔ lb 6¼@ 6¾
Cochin	℔ lb 7¼@ 7½
Cod, Domestic, Prime	.38 @40
Newfoundland	.40 @42
Red, Elaine	.38 @41
Saponified	℔ lb 5¾@ 6
Olive, Yellow	$1.15@$1.25
Neatsfoot, Prime	.55 @58
Palm, Lagos	℔ lb 6 @ 6¼

Mineral Oils—

	℔ gal.
Black, 29 gravity, 25@30 cold test	.13 @13½
29 gravity, 15 cold test	.13½@14
Summer	.12½@13
Cylinder, light filtered	.20½@21
Dark, filtered	.18 @19
Paraffine, 903-907 sp. gravity	.14½@15
903 sp. gravity	.13½@14
883 sp. gravity	.11 @11½
Red	.13½@14

Miscellaneous—

Barytes:		
White, Foreign	℔ ton	$18.50@20.50
Amer., floated	℔ ton	17.00@18.00
Off color	℔ ton	12.50@15.00
Chalk, in bulk	℔ ton	3.00@ 3.40
China Clay, Imported	℔ ton	11.50@18.00
Cobalt, Oxide	℔ 100 lb	1.45@ 2.60
Whiting, Commercial	℔ 100 lb	42@52
Gilders	℔ 100 lb	.55@ .60
Ex. Gilders	℔ 100 lb	.60@ .65

Putty, Commercial—℔ 100 lb

In bladders	$1.70 @1.80
In bbls. or tubs	1.20 @1.45
In 1 lb to 5 lb cans	2.65 @2.95
In 12½ to 50 lb cans	1.50 @1.90

Spirits Turpentine—℔ gal.

In Oil bbls	41½@42
In machine bbls	.42 @42½

Glue—

	℔ lb
Cabinet	.12 @15
Common Bone	.7½@ 9
Extra White	.18 @24
Fish, liquid, 50 gal. bbls., per gallon	.60 @1.20
Foot Stock, White	.12 @14
Foot Stock, Brown	.9 @11
German Common Hide	.10 @12
German Hide	.12 @18
French	.10 @40
Irish	.13 @16
Low Grade	.10 @12
Medium White	.14 @17

Gum Shellac—

	℔ lb
Bleached, Commercial	.22 @23
Bone Dry	.26 @27
Button	.30 @40
Diamond I	@40
Fine, Orange	.34 @35
A. C. Garnet	.25 @28
G. A. L	.20 @21
Kala Button	.18 @19
D. O	@42
Octagon B	.35 @36
T. N	.23 @24
V. S. O	@40

Colors in Oil—

	℔ lb
Black, Lampblack	.12 @14
Blue, Chinese	.36 @46
Blue, Prussian	.32 @36
Blue, Ultramarine	.13 @16
Brown, Vandyke	.11 @14
Green, Chrome	.12 @16
Green, Paris	@24
Sienna, Raw	.12 @15
Sienna, Burnt	.12 @15
Umber, Raw	.11 @14
Umber, Burnt	.11 @14

White and Red, Lead &c.—

	℔ lb
Lead, English white, in Oil	.10½@10¾
Lead, American White:	
Dry and in Oil, 100, 250 and 500 lb kegs	7
Dry and in Oil, 25 and 50 lb kegs	7¼
Dry and in Oil, 12½ lb kegs	7¼
In Oil, 25 lb tin pails	7½
In Oil, 12½ lb tin pails	8
In Oil, 1, 2, 3 and 5 lb tin cans, ass't	9
Red Lead and Litharge:	
In 100 lb kegs	7
In 25 and 50 lb kegs	7¼
In 12½ lb kegs	7½
In lots of less than 500 lbs, ½¢ ℔ lb advance over above prices of White and Red Lead and Litharge.	
Lead, American. Terms: On lots of 500 lbs and over, 60 days, or 2% for cash if paid in 15 days from date of invoice.	

Zinc, Dry—

	℔ lb
American, dry	5¼@ 5⅝
Red Seal (French process)	6¾@ 7
Green Seal	7¼@ 7½
German Red Seal (French process)	7 @7¼
Green Seal	7½@ 7⅞
White Seal	8¼@ 9
French, Red Seal	8⅜@ 8⅞
Green Seal	10⅜@10⅝

Dry Colors—

	℔ lb
Black, Carbon	6½@10
Black Drop, American	3½@ 8
Black Drop, English	5 @15
Black, Ivory	.16 @20
Lamp, commercial	4 @ 6
Blue, Celestial	4 @ 6
Blue, Chinese	.30 @32
Blue, Prussian	.28 @30
Blue, Ultramarine	3½@15
Brown, Spanish	½@ 1
Carmine, No. 40	$3 10@3 25
Green, Chrome, ordinary	3½@ 5
Green, Chrome, pure	.17 @25
Ocher, American	℔ ton $8.50@16.00
American Golden	2½@ 3¼
French	1¼@ 2
Foreign Golden	3 @ 4
Orange Mineral, English	.10 @12
French	.12¾@13
German	.12 @13
American	9 @10
Red, Indian, English	4½@ 6
American	3 @ 3¼
Red, Turkey, English	4 @10
Red, Tuscan, English	7 @10
Red, Venetian, Amer.	℔ 100 lb $0.50@1.25
English	℔ 100 lb $1.15@1.60
Sienna, Italian, Burnt and Powdered	3 @ 9
Italian, Raw, Powdered	3 @ 7
American, Raw	1½@ 2
American Burnt and Pow'd	1½@ 2
Talc, French	℔ ton $18.00@25.00
American	℔ ton 15.00@25.00
Terra Alba, French	℔ 100 lb .90@ 1.00
English	℔ 100 lb .80@ 1.00
American	℔ 100 lb, No. 1. .75@ .80
American	℔ 100 lb, No. 2. .60@ .65
Umber, T'key, Bnt. & Pow.	2½@ 3
Turkey, Raw and Powdered	2½@ 3
Burnt, American	1½@ 2
Raw, American	1½@ 2
Yellow, Chrome, Pure	12¾@15
Vermilion, American Lead	7 @25
Quicksilver, bulk	.65 @..
Quicksilver, bags	@68
English, Imported	.65 @70
Chinese	$0.90@1.00

THE IRON AGE

The oldest paper in the world devoted to the interests of the Hardware, Iron, Machinery and Metal Trades, and a standard authority on all matters relating to those branches of industry.

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ENTERED AT THE POST OFFICE, NEW YORK, AS SECOND CLASS MATTER

Current Hardware Prices.

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

Range of Prices.—A range of prices is indicated by means of the symbol @. Thus 33⅓ @ 33⅓ & 10% signifies that the price of the goods in question ranges from 33⅓ per cent. discount to 33⅓ and 10 per cent. discount.

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued annually, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

Standard Lists.—"The Iron Age Standard Hardware Lists" contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Adjusters, Blind—
Columbian and Domestic....33⅓%
North's 10%
Upson's Patent, ₱ gro., $29.90....10%
Zimmerman's—See Fasteners, Blind.

Window Stop—
Ives' Patent....10%
Ives' Stop Bead Screws and Washers 10%
Taplin's Perfection....10%

Ammunition—See *Caps, Cartridges, Shells, &c.*

Anti—Rattlers—
Fernald Mfg. Co. Burton Anti-Rattlers, ₱ doz. pairs, Nos. 1, $0.75; 2, $0.60; 4, $1.00; 5, $0.50.
Fernald Quick Shifter, ₱ doz. pairs ....$2.00@$3.00

Anvils—American—
Eagle Anvils....₱ lb @8 ¢
Hay-Budden, Wrought....9½@9¾¢
Trenton ....₱ lb 9½@9¾¢

Imported—
Swedish Solid Steel Sisco, Superior, ₱ lb....10@10½¢
Peter Wright & Sons, ₱ lb, 84 to 319 lb, 11¢; 350 to 600 lb, 11½¢.

Anvil, Vice and Drill—
Millers Falls Co., $18.00....15&10%

Apple Parers—See *Parers, Apple, &c.*

Aprons, Blacksmiths'—
Livingston Nail Co....10%

Augers and Bits—
Com. Double Spur....75&10@80%
Jennings' Patn., Bright.65&10@70%
Black Lip or Blued...65@65&5%
Boring Mach. Augers....70%
Car Bits, 12-in. twist....40&10%
Ford's Auger and Car Bits....40&5%
Ft. Washington Auger Co., Conard's 35%
Forstner Pat. Auger Bits....25%
C. E. Jennings & Co.:
No. 10 ext. lip. R. Jennings' list, 25&7½%
No. 30, R. Jennings' list....50%
Russell Jennings'....25&10&2½%
L'Hommedieu Car Bits....15%
Mayhew's Countersink Bits....45%
Pugh's Black....20%
Pugh's Jennings' Pattern....35%
Snell's Auger Bits....60%
Snell's Bell Hangers' Bits....60%
Snell's Car Bits, 12-in. twist....60%
Snell's King Auger Bits....50%
Swan's ....65&10@70%
Swan's, Jennings' Pattern....50%
Wright's Jennings' Bits....50%

Bit Stock Drills—
See *Drills, Twist.*

Expansive Bits—
Clark's Pattern, No. 1, ₱ doz., $26; No. 2, $18....60&10%
Ford's, Clark's Pattern...60&5@60&10%
C. E. Jennings & Co., Steer's Pat...25%
Lavigne Pat., small size, $18.00; large size, $26.00....60&10%
Swan's 60%

Gimlet Bits—
Per gro.
Common Dbl. Cut....$3.00@3.25
German Pattern, Nos. 1 to 10, $4.75; 11 to 13, $5.75

Hollow Augers—
Bonney Pat., per doz..$5.50@6.00
Ames ....20&10%
Universal 20%

Ship Augers and Bits—
Ship Augers....40&10@—%
Ford's ....33⅓&5%
C. E. Jennings & Co.:
L'Hommedieu's 6%
Watrous' ....33⅓&7½%
Snell's 48%

Awl Hafts—See *Handles, Mechanics' Tool.*

Awls—
Brad Awls:
Handled ....gro. $2.75@3.00
Unhdld, Shldered...gro.63@66¢
Unhandled, Patent..gro.66@70¢
Peg Awls:
Unhandled, Patent..gro. 31@34¢
Unhdld, Shldered..gro. 65@70¢
Scratch Awls:
Handled, Com...gro. $3.50@4.00
Handled, Socket..gro.$11.50@12.00

Awl and Tool Sets—See *Sets, Awl and Tool.*

Axes—
Single Bit, base weights: Per doz.
First Quality....$4.75@5.00
Second Quality....$4.25@4.50
Double Bit, base weights:
First Quality....$7.00@7.50
Second Quality....$6.50@6.75

Axle Grease—
See *Grease, Axle.*

Axles—
Iron or Steel.
Concord, Loose Collar...4¼@4½¢
Concord, Solid Collar....4½@5 ¢
No. 1 Common, Loose...3½@4 ¢
No. 1½ Com., New Style.4¼@4¾¢
No. 2 Solid Collar....4¼@4¾¢
Half Patent:
Nos. 7, 8, 11 and 12....70%
Nos. 13 to 14....70%
Nos. 15 to 18...70&10@70&10@5%
Nos. 19 to 22...70&10@70&10@5%

Boxes, Axles—
Common and Concord, not turned ....lb., 5@6¢
Common and Concord, turned, lb., 6@7¢
Half Patent....lb., 9½@10¢

Bait—
Fishing—
Hendryx:
A Bait....22%
B Bait....25%
Competitor Bait....20&5%

Balances—
Sash—
Caldwell new list....50&10%
Pullman ....50&10%

Spring—
Light Spring Balances..60@60&5%
Chatillon's:
Light Spg. Balances....50@50&10%
Straight Balances....40@40&10%
Circular Balances....50&10%
Large Dial....30%

Barb Wire—See *Wire, Barb.*

Bars—
Crow—
Steel Crowbars, 10 to 40 lb.... per lb., 2¼@2½¢

Towel—
No. 10 Ideal, Nickel Plate..₱ gro. $8.50

Beam, Scale—
Scale Beams....40%
Chattillon's No. 1....30%
Chatillon's No. 2....40%

Beaters,
Carpet—
Holt-Lyon Co.:
No. 12 Wire Coppered ₱ doz. $0.80; Tinned $0.85
No. 11 Wire Coppered ₱ doz. $1.15; Tinned $1.20
No. 10 Wire Tinned....₱ doz. $1.50

Beaters Egg—
Dover Stamping & Mfg. Co.:
Genuine Dover, per gro., No. 1, Tumbler Size, $7.50; No. 2, Family Size, $7.50; No. 3, Extra Family Size, $24.00; No. 4, Hotel Size, $30.00.
Holt-Lyon Co.:
Holt, per doz., No. 5, Jap'd $0.80; No. A, Jap'd, $1.15; No. B, Jap'd, $1.85; No. 6, Jap'd, $1.65.
Lyon, Jap'd, per doz., No. 2, $1.35.
Taplin Mfg. Co.:
Improved Dover, per gro., No. 60, $5.00; No. 75, $6.50; No. 100, $7.00; No. 102, Tin'd, $8.50; No. 150, Hotel, $15.00; No. 152, Hotel Tin'd, $17.00; No. 200, Tumbler, $8.50; No. 202, Tumbler Tin'd, $9.50; No. 300, Mammoth, per doz., $25.00.

Bellows—
Blacksmith, Standard List:
Split Leather....60&10@65%
Grain Leather....50@50&10%

Net Prices.

Hand—

Inch..	6	7	8	9	10
Doz..	$5.00	5.50	6.00	6.50	7.50

Molders—

Inch..	10	12	14	16
Doz..	$7.50	9.00	12.00	15.00

Bells—
Cow—
Wrought Cow Bells....75%
Jersey ....75&10%
Texas Star....50%

Door—
Home, R. & E. Mfg. Co.'s....55&10%

Hand—
Polished, Brass....60@60&10%
White Metal....60@60&10%
Nickel Plated....50&10%
Swiss ....50&10%
Cone's Globe Hand Bells....33⅓@35%

Miscellaneous—
Farm Bells....lb., 2¼@2½¢
Church and School....60@60&10%

Belting—
Leather—
First Quality, Ex. Hy., Strictly Short Lap....60&10%
Standard ....70&10@70&10&5%
Light Double....75&10%
Cut Leather Lacing....50%
Leather Lacing Sides, per sq. ft. 23@24¢

Rubber—
Competition (Low Grade), 70&10@75%
Standard ....60&10@70%
Best Grades....40@50%

Bench Stops—
See *Stops, Bench*

Benders and Upsetters, Tire—
Green River Tire Benders and Upsetters 20%

Bicycle Goods—
John S. Leng's Son & Co.'s 1908 list: Chain, Parts, Spokes....50%
Tubes 60%

Bits—
Auger, Gimlet, Bit Stock Drills, &c.—See *Augers and Bits.*

Blocks
Tackle—
Common Wooden....75@75&5%
B. & L. B. Co.:
Boston Wood Snatch, 50%; Eclipse Steel, 75%; Hollow Steel, 50&10%; Star Wire Rope, 50%; Tarbox Metal Snatch, 50%; Tarbox New Style Steel, 50&10%; Wire Rope Snatch, 50%.
Lane's Patent Automatic Lock and Junior 30%
See also Machines, Hoisting.

Boards, Stove—
Paper and Wood Lined....55%
Embossed 55%

Boards, Wash—
See *Washboards.*

Bobs, Plumb—
Keuffel & Esser Co....33⅓&10%

Bolts
Carriage, Machine, &c.—
Common Carriage (cut thread):
⅜ x 6 and smaller..75&5@—%
Larger and longer....70&5@—%
Phila. Eagle, $3.00 list...80@—%
Bolt Ends....70&10@—%
Machine (Cut Thread):
⅜ x 4 and smaller..75&10@—%
Larger and longer...70&10@—%

Door and Shutter—
Cast Iron Barrel, Japanned, Round Brass Knobs:

Inch	3	4	5	6	8
Per doz..	$0.30	.35	.45	.60	.80

Cast Iron Spring Foot, Jap'd:

Inch	6	8	10
Per doz.	$1.20	1.50	2.25

Cast Iron Chain, Flat, Japanned:

Inch	6	8	10
Per doz.	$1.00	1.40	1.65

Cast Iron Flat Shutter, Jap'd, Brass Knobs:

Inch	6	8	10
Per doz.	$0.75	.95	1.25

Wrought Barrel Japanned, 80&10@80&10&5%
Barrel Bronzed....60&10%
Spring ....70&10@70&10&10%
Shutter ....50&5@50&10&5%
Square Neck....75@75&10%
Square ....70&10@80%
Ives' Mortise....10%
Ives' Wrought Metal....10%

Expansion—
F. H. Evans' Crescent....40@60%
Richards Mfg. Co....55&10%
Star Expansion Bolt Co.:
Star, Lag Screw Type..60&10&5&2½%
Star, Wood Screw Type....40%
Star, Machine, Single Wedge....60%
Star, Machine, Double Wedge....60%
Steward & Romain Mfg. Co.:
Style No. 13, Double....60%
Style No. 1, Single....60%
Style No. 100, Dbl. Jaw, Single..55%
Lag Screw....66⅔%

Plow and Stove—
Plow ....65&5@70%
Stove ....85@85&5%

Tire—
Common Iron....80%
Norway Iron....80%
American Screw Co.:
Norway Phila., list Oct. 14, '84...80%
Eagle Phila., list Oct. 16, '84...82½%
Bay State, list Dec. 28, '99....80%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84...82½%
Eclipse, list Dec. 28, '99....80%
Russell, Burdsall & Ward Bolt & Nut Co.:
Empire, list Dec. 28, '99....80%
Norway Phila., list Oct. '84....80%
Eagle 82½%
Shelton Co.:
Tiger Brand, list Dec. 28, '99...80%
Phila., Eagle, list Oct. 16, 1884..82½%
Upson Nut Co.:
Tire Bolts....72½%

Borers, Bung—
Borers Bung, Ring, with Handle:

Inch	1¼	1½	1¾	2
Per doz.	$4.80	5.60	6.40	8.00
Inch			2¼	2½
Per doz			$8.65	11.50

Enterprise Mfg. Co., No. 1, $1.25; No. 2, $1.75; No. 3, $2.50 each....25%

Boxes, Mitre—
C. E. Jennings & Co....25%
Langdon, New Langdon and Langdon Improved, 20&10%; Langdon Acme ....15&10%
Perfection 40%
Seavey 45%

Braces—
Comman Ball, American....$1.50
Barber's ....50&10&10@60&10%
Fray's Genuine Spofford's....60%
Fray's No. 61, 166, 206, 614....50%
C. E. Jennings & Co....50&5%
Mayhew's Ratchet....60%
Mayhew's Quick Action Hay Pat...50%
Millers Falls Drill Braces....25&10%
P., S. & W. Co., Peck's Pat....60&10%

Brackets—
Wrought Steel....75&10&5@80%
Bradley Metal Clasp...80&10@80&10&5%
Griffin's Pressed Steel....75@75&10%
Griffin's Folding Brackets....70&10%
Taplin Victor Handy Egg Beater Bracket ....₱ doz. $1.50

Bright Wire Goods—
See *Wire and Wire Goods.*

Broilers—
Kilbourne Mfg. Co....75&20%
Wire Goods Co....75%

Buckets, Galvanized—
M'fr's list, price per gross.

Quart..	10	12	14	
Water, Reg...	$6.85	29.50	33.50	10&7½&5&5%
Water, Hvy...	45.35	48.00	52.00	
Fire, Rd. Btm.	32.00	34.55	38.65	
Well	37.35	41.35	45.35	

Bull Rings—See *Rings, Bull.*

Butts—
Brass—
Wrought, High List, Oct.26,'06.65%
Cast Brass, Tiebout's....40&10%

Cast Iron—
Fast Joint, Broad....40&10@50%
Fast Joint, Narrow...40&10@50%
Loose Joint....70&10@75%
Loose Pin....70&10@75%
Mayer's Hinges....70@70&5
Parliament Butts....70@70&5

Wrought Steel—
Bright.
Light Narrow, Light Reversible ....70&5%
Reversible and Broad..70&5%
Loose Joint, Narrow, Light Inside Blind, &c....70%
Back Flaps, Table Chest..65% Japanned.
Light Narrow, Loose Pin, 40&5%
Light Narrow, Ball Tip..60% Broad ....40&5%
Steeple Tipped....70%
Ball Tipped....70%

Extra, 10—

Cages, Bird—

Hendryx Brass: Series 3000, 5000, 1100, net list; 1200, 15%; 200, 300, 900 ..... 36%
Hendryx Bronze: Series 700, 800....30%
Hendryx Enameled..... 35%

Calipers—See *Compasses.*

Calks, Toe and Heel—

Blunt, 1 prong, per 100 lb., $3.50@$3.85
Sharp, 1 prong, per 100 lb., $4.00@$4.35
Burke's, 1 pg. Blunt Toe, 3¾¢; 2 pg. Blunt Toe, 4¼¢; 1 pg. Sharp Toe, 4¼¢; 2 pg. Sharp, 4¾¢; Blunt Heel, 4¼¢; Sharp Heel.....4¾¢
Lautier, Blunt, 4@4¼¢; Sharp, 4½@4¾¢
Perkins', Blunt, ℔ lb, 3.65¢; Sharp, 4.15¢

Can Openers—

See *Openers, Can.*

Caps, Percussion—

Eley's E. B.....52@55¢
G. D.....per M 34@35¢
F. L.....per M 40@42¢
G. E.....per M. 48@50¢
Musket .....per M 62@63¢

Primers—

Berdan Primers, $2 per M..20&c%
Primer Shells and Bullets..15&10%
All other primers per M. $1.52@1.60

Carpet Stretchers—

See *Stretchers, Carpet.*

Cartridges—

Blank Cartridges:
32 C. F., $5.50.....10&5%
38 C. F., $7.00.....10&5%
22 cal. Rim, $1.50.....10&5%
32 cal. Rim, $2.75.....10&5%
B. B. Caps, Con. Ball, Swgd. $1.90
B. B. Caps, Round Ball.....$1.49
Central Fire.....25%
Target and Sporting Rifle. 15&5%
Primed Shells and Bullets. 15&10%
Rim Fire, Sporting.....50%
Rim Fire, Military.....15&5%

Casters—

Bed .....65&10@70%
Plate .....60@60&5%
Philadelphia .....70&10@75%
Acme, Ball Bearing.....35%
Gem (Roller Bearing).....70&10&10&c%
Steel Gem (Roller Bearing).....70%
Standard Ball Bearing.....40%
Yale (Double Wheel) low list...40&10%

Cattle Leaders—

See *Leaders, Cattle.*

Chain, Proof Coil—

American Coil, Straight Link:

3-16	¼	5-16	⅜	½	⅝
$7.70	5.10	4.15	3.50	3.30	3.10

⅛-⅜-1 1⅛ to 1¼ inch.
$3.00 3.10
In cask lots, deduct 25¢.
German Coil.....70%
German Pattern Coil:
6-0 to 1.....70&10&5%
2 and 3.....60&10&10@70%
4, 5 and 6.....50&10@50&10&5%

Halter—

Halter Chains.....60&5@60&10%
German Pattern Halter Chains, list July 24, '97....60&10&5@70%
Covert Mfg. Co.:
Halter .....35&5%

Cow Ties—

See *Halters and Ties.*

Trace, Wagon, &c.-

Traces, Western Standard: 100 pr.
6½—6-3, Straight, with ring. $28.00
6½—6-2, Straight, with ring. $29.00
6½—8-2, Straight, with ring. $32.00
6½—10-2, Str'ght, with ring. $37.00
NOTE.—Add 2c per pair for Hooks Twist Traces: add per pair for Nos. 2 and 3, 2c: No. 1, 3c; No. 0, 4c to price of Straight Link.
Eastern Standard Traces, Wagon Chain, &c...60&10@60&10&5%

Miscellaneous—

Jack Chain, list July 10, '93:
Iron .....60&10&5@60&10&10%
Brass 65%
Safety and Plumbers' Chain. 75%
Gal. Pump Chain....lb., 4½@5%
Bridgeport Chain Co.:
Triumph Halter and Coil.35&2½@40%
Triumph Dog.....50&10@60%
Brown Halter and Coil....45@50&5%
Covert Mfg. Co.:
Breast, Halter, Heel, Rein, Stallion 40%
Oneida Community:
American Halter, Dog and Kennel Chains .....35&2½@40%
Niagara Dog Leads and Kennel Chains .....45@50&5%
Wire Goods Co.:
Dog Chain.....70%
Universal Dbl. Jointed Chain....70%

Chain and Ribbon, Sash—

Oneida Community:
Steel Chain.....60%
Pullman:
Bronze Chain, 60%; Steel Chain, Coppered .....60&10%
Sash Chain Attachments, per set..8¢
Aluminoy Sash Ribbon, per 100 ft. .....$2.00@$5.00
Sash Ribbon Attachments, per set..8¢

Chalk—

Carpenters' Blue.....gro., 50¢
Carpenters' Red.....gro., 50¢
Carpenters' White.....gro., 40¢

Checks, Door—

Bardsley's 45%
Pullman, per gro.....$54.00
Russwin 33⅓%

Chests, Tool—

American Tool Chest Co.:
Boys' Chests, with Tools.....55%
Youths' Chests, with Tools.....40%
Gentlemen's Chests, with Tools...50%
Farmers', Carpenters, etc., Chests, with Tools 20%
Machinists' and Pipe Fitters' Chests, Empty.....45%
Tool Cabinets.....45%
C. E. Jennings & Co.'s Machinists' Tool Chests.....7½%

Chisels—

Socket Framing and Firmer

Standard List.....80&10@—%
Buck Bros.....30%
C. E. Jennings & Co.:
Socket Firmer No. 10.....25&7½%
Socket Framing No, 15.....25&7½%
Swan's .....66⅔@70%
L. & I. J. White & Co.....30@30&5%

Tanged—

Tanged Firmers.....30&5@35%
Buck Bros.....30%
C. E. Jennings & Co. Nos. 191, 181..25%
L. & I. J. White Co.....25&5%

Cold—

lb.
Cold Chisels, good quality. 13@15¢
Cold Chisels, fair quality. 11@12¢
Cold Chisels, ordinary.... 9@10¢

Chucks—

Almond Drill Chucks.....35%
Almond Turret Six-Tool Chuck.....40%
Beach Pat, each $8.00.....35&5%
Empire 25%
Blacksmiths' 25%
Jacobs' Drill Chucks.....35%
Pratt's Positive Drive.....25%
Skinner Lathe Chucks:
Independent 35%
Universal, Reversible Jaws.....35%
Universal, Com. Style Jaws.....40%
Combination, Reversible Jaws.....35%
Combination, Com, Style Jaws...40%
Round Body or Box Body, 2 Chuck Jaws 25%
Geared Scroll Chucks.....25%
Drill Chucks:
New Model, 25%; Geared Pattern, 25%; Skinner Patent, ..25%
Positive Drive.....40%
Planer Chucks.....20%
Standard 45%
Drill Press Vises.....30%
Face Plate Jaws.....35%
Standard Tool Co.:
Improved Drill Chuck.....45%
Union Mfg. Co.:
Combination, Nos. 1, 2, 3, 4, 5, 6, 7, 8 and 17, 40%; No. 21.....35%
Scroll Combinations, Nos. 83 and 84 .....30%
Geared Scroll, Nos. 33, 34 and 35..25%
Independent Iron, Nos. 18 and 318.35%
Independent Steel, No. 64.....25%
Union Drill, Nos. 000, 00, 100, 101, 102, 103, 104.....35%
Union Czar Drill.....25%
Universal, 11, 12, 16, 17, 13, 14, 15..40%
Universal No. 42.....35%
Iron Face Plate Jaws, Nos. 28, 30, 48 and 50.....35%
Steel Face Plate Jaws, Nos. 70 and 72 .....30%
Westcott Patent Chucks:
Lathe Chucks.....50%
Little Giant Auxiliary Drill.....50%
Little Giant Double Grip Drill...50%
Little Giant Drill, Improved.....50%
Oneida Drill.....50%
Scroll Combination Lathe.....50%
Whitaker Mfg. Co.:
National Drill.....25%

Clamps—

Carriage Makers', Star, P., S. & W. Co. 50%
Besly, Parallel.....33⅓&10%
Hammer & Co.:
Adjustable .....20&5%
Carriage Makers' H. P. Screw.40&5%
Myers' Hay Rack.....50%
Lineman's Swedish Neverturn.....65%
Saw Clamps, see Vises, Saw Filers'

Cleaners, Drain,

Iwan's Champion, Adjustable.....50%
Iwan's Champion, Stationary.....40%

Sidewalk—

American Fork & Hoe Co.:
Star, ℔ doz., Socket, $4.00; Shank $3.50
Shank, ℔ doz., X 7½, $3.50; Shank, X 8.....$3.75

Cleavers, Butchers'—

Foster Bros.....30%
Fayette R. Plumb.....30%
L. & I. J. White Co.....30%

Clippers, Horse and Sheep—

Chicago Flexible Shaft Co.:
1902 Chicago Horse, each..$10.75
20th Century Horse, each...$5.00
Lightning Belt Horse, each.$15.00
Chicago Belt Horse, each..$20.00
Stewart's Enclosed Gear Roll Bearing Horse, each.....$6.75
Stewart's New Model Sheep Shearing Machine, each.$12.75
Stewart Enclosed Gear Shearing Machine, No. 8, each..$9.75
} 20%

Clips, Axle—

Regular Styles, list July 1, '05, 80&80&10%

Cloth and Netting, wire

—See *Wire, &c.*

Cocks, Brass—

Hardware list:
Plain Bibbs, Globe, Kerosene, Racking, Liquor, Bottling, &c 75%
Compression Bibbs.....70%

Coffee Mills—

See *Mills, Coffee.*

Collars, Dog—

Nickel Chain, Walter B. Stevens & Son's list.....40%
Leather, Walter B. Stevens & Son's list 40%

Compasses, Dividers, &c.

Ordinary Goods.....70&10@75%

Conductor Pipe,—

L. C. L. to Dealers:

	Gal. Steel.	Charcoal.	Copper.
Northeastern:			
70&10%	50&10&7½%	50&10%	
Eastern:			
70&10&5%	50&10&7½%	50&10%	
Central:			
75&5%	60%	50&10%	
Northwestern:			
75&2½%	60%	50&10%	
Western:			
70&7½%	50&12½%	50&5%	
Tennessee:			
70&10%	50&12½%	50&10%	
Southern:			
70%	50&12½%	50&5%	
Southwestern:			
70%	50&5%	50&5%	

Terms, 60 days: 2% cash 10 days. Factory shipments generally delivered.
See also Eave Troughs.

Coolers, Water—

L. & G. Mfg. Co.:

Gal.	2	3	4	6	8
Galvanized, ea.	$1.85	$2.00	$2.25	$2.90	$3.90

Galvanized, Lined, side handles,

Gal.	2	3	4	6	8
Each	$1.95	$2.15	$2.40	$3.30	$4.15

White Enameled.....10%
Agate Lined.....10%

Coppers' Tools—

See *Tools, Coopers'.*

Coppers, Soldering—

Soldering Coppers, 3 lb. to pair and heavier, 21½¢; lighter than 3 lb. to pair.....23½¢

Cord— Sash—

Braided, Drab.....lb. 35¢
Braided, White, Com., Nos. 8 to 12, 21¢; No. 7, 21½¢; No. 6, 22½¢. In lots of 12 doz. or over, 1 cent less per pound.
Cable Laid Italian, lb., No. 18. 37¢
Italian, lb., A, No. 18, 25¢; B, 22¢
Common India.....lb., 11@11½¢
Cotton Sash Cord, Tw'ted. 18@20¢
Patent Russia.....lb....20¢
Cable Laid Russia.....lb...21¢
India Hemp, Br'd'd.....lb...21¢
India Hemp, Twisted...lb. 13@14¢
Patent India, Twisted..lb...17¢
Pearl Braided, cotton, No. 6, ℔ lb. 20½¢; No. 7, 19½¢; Nos. 8 to 12, 19½¢, in 12 doz, to 100 doz. lots.
Eddystone Braided, Nos. 8 to 12, 26¢; 7, 26½; 6, 27½¢.
Harmony Cable Laid Italian, Nos. 7 to10.....℔ lb 23¢
Pullman:
Wire Sash Cord.....10%
Sash Cord Attachments, per 100..$2.00
Samson, Nos. 8 to 12:
Braided, ℔ lb., Drab Cotton, 55¢; Italian Hemp, 40¢@ 50¢; Linen, 65¢; White Cotton, 50¢; Spot Cord.....50¢
Massachusetts, White...℔ lb 40¢
Massachusetts, Drab...℔ lb 45¢
Phoenix, White, Nos 8 to 12....27¢
} 15%
Silver Lake, per lb.:
A, Drab, 45¢; A, White, 40¢; B, Drab, 40¢; B, White, 35¢; Italian Hemp, 40¢; Linen....57½¢
See also Chain and Ribbon.

Wire, Picture—

Full Length.....90@—%
Short Length.....90&20@—%
Hendryx Standard Wire Picture Cord, old list, 85&10%
Turner & Stanton Co. Wire Picture Cord 90%

Cradles—

Grain 50%

Crayons—

White Round Crayons, Cases, 100 gro., $8.00, $8.50, $9.00 and $10.00 according to grade.
Zelnicker's Lumber: ℔ gro.
White and Purple, Indelible....$7.50
Blue, Red, Green, Yellow and Terra Cotta, $6.50; Black.....$4.50
Giant Lumber, 5¼ in. x 15-16 in. round, all colors, $12.00; Indelibles, $14.00; Blacks.....$10.00
Genuine Soapstone, Metal Workers', 5 in. x ¼ in. Round, $2.50; 5 in. x ¼ in. Square, $1.75; 5 x ½ x 3-16, $2.50; 5 x 1¼ x 3-16.....$3.00
Suremark, Black, $2.25; Blue, Red and Yellow.....$2.50

Crooks, Shepperds'—

American Fork & Hoe Co.:
Montana .....℔ doz. $4.50

Crow Bars—See *Bars, Crow.*

Cultivators—

American Fork & Hoe Co.:
Victor Garden.....50&10%

Cutlery, Table—

International Silver Company:
No. 12 M'd'm Knives, 1847.℔ doz. $3.50
Star, Eagle, Rogers & Hamilton and Anchor.....℔ doz. $3.00
Wm. Rogers & Son.....℔ doz. $2.50

Cutters— Glass—

H. H. Mayhew Co.....40%
Red Devil.....60%
B. Mfg. Co.....40%
Woodward 50%

Meat and Food—

American 30%
Nos. 401 402 403 404 405 406 407
Each ... $5 $7 $10 $12 $25 $50 $60
Enterprise:
Nos..... 5 10 12 22 32
Each ..$2 $3 $2.75 $4.50 $6 25@25&7½%
No. 202, $1.50.....10&7½%
P., S. & W. Co.:
Ideal .....40@10&5%

Hales .....60&5%
Little Giant.....℔ doz. 40@50%
Nos.. 305 310 312 320 322
$35.00 $18.00 $44.00 $72.00 $68.00
New Triumph No. 605, ℔ doz. $24.00. 40%
Russwin Food, No. 1, $24.00; No. 2, $27.00; 3, $42.00.....45&10&10%
$15.00 $18.00
Enterprise Beef Shavers.....25@30%

Siaw and Kraut—

Henry Disston & Sons:
Slaw and Kraut Cutters.....35%
Corn Graters.....30%
J. M. Mast Mfg. Co.:
Slaw Cutters, 1 Knife....℔ doz. $3.00
Combined Slaw Cutter and Corn Grater .....℔ doz. $4.00

Tobacco—

All Iron, Cheap...doz, $1.25@1.50
Enterprise .....25@30%
National, ℔ doz., No. 1, $21; No. 2, $18 .....40%

Diggers, Post Hole, &c—

Disston's:
Rapid, ℔ doz., $24.00.....25%
Samson, ℔ doz., $34.00.....25%
Iwan's Pat. Post Hole and Well Auger 40%
Vaughan Pattern Post Hole Augers, ℔ doz., $7.00
Perfection Post Hole Diggers, ℔ doz. $8.50
Split Handle Post Hole Diggers, ℔ doz., $7.50
Hercules Pattern, ℔ doz.....$9.50
Kohler's, ℔ doz., Universal, $14.00; Little Giant, $12.00; Hercules, $10.00; Invincible, $9.00; Rival, $8.50; Pioneer.....$7.50
Never-Break Crucible Steel Post Hole Diggers 60%

Dividers—See *Compasses.*

Drawing Knives—

See *Knives, Drawing.*

Dressers Emery Wheel—

Sterling Emery Wheel Dressers.....35%
Sterling Wheel Dresser Cutters.....35%

Drills and Drill Stocks—

Blacksmith's Common Drilling Machines .....$1.50@1.75
Breast, Millers Falls.....15&10%
Breast, P., S. & W.....33⅓%
C. & C. Ratchet.....25%
Reversible Ratchet Die Stocks....25%
Goodell Automatic Drills.50&10@60&10%
Millers Falls Automatic Drills, Graves', per doz., Nos. 1, $4.86; 2, $8.16.
Millers Falls Automatic Drills.33⅓&10%
Ratchet, Curtis & Curtis.....25%
Ratchet, Parker's.....40%
Ratchet, Weston's.....40%
Ratchet, Weston's, Style H Improved .....40@40&5%
Ratchet, No. 012.....40@40&5%
Ratchet, Celebrated.....40@40&5%
Ratchet, Whitney's, P., S. & W.. 40&10@50%
Whitney's Adjustable, No, 10, $12.00, 33⅓%

Twist Drills—

Bit Stock.....70@70&5%
Taper and Straight Shank. 60&10@70%

Drivers, Screw—

Screw D'ver Bits, per doz. 45@50¢
Balsey's Screw Holder and Driver, ℔ doz., 2¼-in., $6; 4-in., $7.50; 6-in. $9 .....50%
Buck Bros.' Screw Driver Bits.....30%
Champion 50%
Disston's 70%
Fray's Hol. H'dle Sets, No. 3, $12..50%
Ford's Brace Screw Drivers....40&10%
Gay's Double Action Ratchet.....35%
Goodell's Auto.....65@65&10%
Mayhew's Black Handle.....40%
Mayhew's Monarch.....40%
Millers Falls, ℔ doz., Nos. 11, $9.95; 12, $13.73; 20, $8.17; 21, $8.46; 41, $13.43; 42, $17.21.
Smith & Hemenway Co., Neverturn, 66⅔%; Elmora, 62%; Star, 30&10%
Swan's:
Nos. 7565 to 7568, 60%; No, 7540, 40&10%

Eave Trough, Galvanized—

Territory.	*Gal. Steel.*	*Copper.*
Northeastern	*75&10&5%*	*50&10%*
Eastern	*80%*	*50&10%*
Central	*80&10&5%*	*50&10%*
Northwestern	*80&10&5%*	*50&10%*
Western	*80&5%*	*50&5%*
Tennessee	*80&5%*	*50&10%*
Southern	*75&10%*	*50&5%*
Southwestern	*75&10&2½%*	*50&5%*

Terms.—2% for cash. Factory shipments generally delivered.
Note.—Lower prices are made in some sections.
See also Conductor Pipe and Elbows.

Elbows and Shoes—

Factory shipments, all territories:

	Galv. Steel, Galv. C. I. and Copper.
Sizes 2, 3, ½	*80%*
Sizes 1½, 2½, 3½, 5, 6	*60&10%*
No. 26	*50%*
No. 24	*25%*
Copper Elbows	*50%*

Elbows, Stove Pipe—

Edwards, Standard Blue....40&10&10%
Edwards, Royal Blue.....40&10&10%
Reeves, Dover, Flat Crimp..40&10&5%

Emery, Turkish—

	¼ to ½.	½ to 2.	Flour.
Kegs lb.	5 ¢	5¼¢	5¼¢
½ Kegs lb.	5¼¢	5¾¢	5¾¢
¼ Kegs lb.	5½¢	6 ¢	6 ¢

10-lb. cans, 10 in case	6½¢	7 ¢	6 ¢	
10-lb. cans, less than 10	10 ¢	10 ¢	8 ¢	
Less quantity	10 ¢	10 ¢	8 ¢	

NOTE.—In lots 1 to 3 tons a discount of 10% is given.

Extensions, Bit—
Ford's Auger Bit Extensions....40&5%

Ext. actors, emon Juice—
—See *Squeezers, Lemon.*

Fasteners, Blind—
Zimmerman's Jap'd and Galv., 50 & 5%; Bronze and Plated.....50%
Walling's 50%
Upson's Patent.....40%

Cord and Weight—
Ives, ℔ gro., $1.08.....10%
Titan, ℔ gro.* $0.66.....10%

Corrugated—
Acme Corrugated Fasteners.....70%

Faucets—
Cork Lined.....50&10@60%
Metallic Key, Leather Lined, .. 60&10@70%
Red Cedar.....40&5@40&10&5%
Petroleum.....70&10@75%
B. & L. B. Co.:
Metal Key.....60&10%
Star 60%
West Lock.....50&10%
John Sommer's Peerless Tin Key....40%
John Sommer's Boss Tin Key.....50%
John Sommer's Victor Mtl. Key.50&10%
John Sommer's Duplex Metal Key..60%
John Sommer's Diamond Lock.....40%
John Sommer's I.X.L. Cork Lined..50%
John Sommer's Reliable Cork Lined.. 50&10%
John Sommer's Chicago Cork Lined.60%
John Sommer's O. K. Cork Lined...50%
John Sommer's No Brand, Cedar....50%
John Sommer's Perfection, Cedar....40%
Self Measuring:
Enterprise, Self Measuring and Pump, ℔ doz., $36.00.....40&10%
Lane's, ℔ doz., $36.00.....40&10%
National Measuring, ℔ doz. $36.40&10%

Felloe Plates—
See *Plates, Felloe.*

Files— Domestic—
List Nov. 1, 1899.
Best Brands.....70&10@75&10%
Standard Brands.....75&10@80%
Lower Grade....75&10&10@80&10%
Gold Medal.....70%
McCaffrey's American Standard, 60&10&10%

Imported—
Stubs' Tapers, Stubs' list, July 24, '97.....33⅓@40%

Fixtures, Fire Door—
Richards Mfg. Co.:
Universal, No. 103; Special, No. 104.....$3.75
Fusible Links, No. 96.....50%
Expansion Bolts, No. 107.....60&10%

Grindstone—
Net Prices:

Inch	15	17	19	21
Per doz.	$3.60	3.85	4.15	4.65

Peck, Stow & Wilcox Co.:

In	15	17	19	21	24	
	$4.00	4.40	4.75	5.50	6.50	..30%

Reading Hardware Co.....60%

Fodder Squeezers—
See *Compressors.*

Forks—
American Fork & Hoe Co.:
Iowa Dig-Ezy Potato.....70&5%
Hay, Regular, 3-tine....45&20&12½%
Hay, Regular, 4-tine.....60&7½&5%
Champion, Hay.....60&12½%
Acme, Hay.....60&20%
Manure, Regular, 4-tine.....65&5%
Manure, Regular, 5 and 6 tine...70%
Champion, Manure.....65&5%
Columbia, Manure.....70%
Acme, 4-tine.....60&10&5%
Round Shoulder Header, 4-tine..65%
Champion, Header.....65%
Dakota, Header.....65%
Kansas Header.....65%
Wood, Barley.....35&5%
Steel, Barley.....66⅔%
Columbia, Spading.....70&7½&5%

Frames— Wood Saw—
White, S'g't Bar, per doz.75@80¢
Red, S'g't Bar, per doz.$1.00@1.25
Red, Dbl. Brace, per doz.$1.40@1.50

Freezers, Ice Cream—

Qt	1	2	3	4	6
Each	$1.25	$1.60	$1.90	$2.20	$2.80

Fruit and Jelly Presses—
See *Presses, Fruit and Jelly.*

Fry Pans—See *Pans, Fry.*

Fuse—

	Per 1000 Feet.	
Hemp	$2.75	10&2½%
Cotton	3.20	
Waterproof Sgl. Taped	3.65	
Waterproof Dbl. Taped	4.40	
Waterproof Tpl. Taped	5.15	

Gates, Molasses and Oil—
Stebbins' Pattern.....80@80&5%

Gauges—
Marking, Mortise, &c..50@50&10%
Chapin-Stephens Co.:
Marking, Mortise, &c.....50&50&10%
Disston's Marking, Mortise, &c..67½%
Wire, Brown & Sharpe's.....33⅓%
Wire, Morse's.....25%
Wire, P. S. & W. Co.....33⅓%

Gimlets— Single Cut—
Numbered assortments, per gro.
Nail, Metal, No. 1, $2.00; 2, $2.30
Spike, Metal, No. 1, $1.00; 2, $1.30
Nail, Wood Handled, No. 1, $2.30; 2, $2.60
Spike, Wood Handled, No. 1, $1.30; 2, $1.60

Glass, American Window
See *Trade Report.*

Glasses, Level—
Chapin-Stephens Co.....65@65&10%

Glue, Liquid Fish—
Bottles or Cans, with Brush, 25&10@50%
Elwell's 40%

Grease, Axle—
Common Grade..gro.$6.00@$6.50
Dixon's Everlasting, 10-lb. pails, ea. 85¢; in boxes, ℔ doz., 1 lb, $1.20; 2 lb.....$2.00
Helmet Hard Oil.....25%

Griddles, Soapstone—
Pike Mfg. Co.....33⅓@33⅓&10%

Grinders—
Pike Mfg. Co.:
Hand and Foot Power, Pyko Nos. 1, 2, 3; Pyko Primo; Pyko Peerless; Pyko Spiral (foot power).33⅓%
Mower Knife and Tool, $5.00..40&10%
Royal Mfg. Co.:
Alundum Grinding Machines, each, Nos. 01, $1.75; 1A, $2.50; 10, $5.00 .....30%
Alundum Sickle Grinders, each, Nos. 20, $5.00; 20A, $6.00; 20A Combined, $6.50.....30%
Alundum Disc Grinders, each, $2.50 .....30%

Grindstones—
Pike Mfg. Co.:
Improved Family Grindstones, ℔ inch, ℔ doz., $2.00.....33⅓%
Richards Mfg. Co., Eli and Cycle, Ball Bearing, mounted.....40%

Grips, Nipple—
Perfect Nipple Grips.....40&10&2%

Halters and Ties—
Cow Ties.....65@65&10%
Bridgeport Chain Co.:
Triumph Coil and Halters.35&2½@40%
Brown Coil and Halters...45@50&5%
Brown Cow Ties.....50&5@50&10&5%
Brown Tie Outs.....70&10@75&5%
Covert Mfg. Co.:
Web .....30&2%
Jute Rope.....35%
Sisal Rope.....20%
Cotton Rope.....45%
Hemp Rope.....45%
Oneida Community:
Am. Coil and Halters.....40@40&5%
Am. Cow Ties.....45@50%
Niagara Coil and Halters...45@50&5%
Niagara Cow Ties.....45&5@50&10&5%

Hammers—
Handled Hammers—
Heller's Machinists'....55&10@55&10&5%
Heller's Farriers.....40&5@40&10&5%
Peck, Stow & Wilcox Co.:
Crucible Steel.....40&10@50%
Farriers' .....40&10@50%
Riveting .....40&10@50%
Machinists' .....66⅔&5%
Blacksmiths' 50%
Fayatte R. Plumb:
A. E. Nail.....40&2½@40&12½%
Eng. and B. S. Hand.50&10&5@60&5%
Machinists' Hammers.....60&10&5%
Rivet and Tinners'.40&7½@40&12½&5%
Victor Magnetic Tack, ℔ gro....$7.75

Heavy Hammers and Sledges—
Under 3 lb., per lb., 50¢...80&10%
3 to 5 lb., per lb., 40¢...80&10&10%
Over 5 lb., per lb., 30¢.....
Over 5 lb., per lb., 30¢..80&10&10%

Handles—
Agricultural Tool Handles
Axe, Pick, &c....60&10@60&10&5%
Hoe, Rake, &c.....40%
Fork, Shovel, Spade, &c.:
Long Handles.....40%
D Handles.....40%

Cross-Cut Saw Handles—
Atkins' 40%
Champion 50%
Disston's 50%

Mechanics' Tool Handles—
Auger, assorted...gro.$3.00@$3.50
Brad Awl.....gro.$1.65@$1.75
Chisel Handles, Ass'd, per gro.:
Tanged Firmer, Apple, $2.40@ $2.65; Hickory.....$2.15@2.40
Socket Firming, Apple, $1.75@ $1.95; Hickory.....1.60@1.75
Socket Framing, Hickory, $1.60@$1.75
File, assorted.....gro.$1.30@$1.40
Hammer, Hatchet, &c., 60&10@60&10&5%
Hand Saw, Varnished, doz., 80¢ 85¢; Not Varnished.....65@75¢
Plane Handles:
Jack, doz., 30¢; Fore, doz...45¢
Chapin-Stephens Co.:
Carving Tool.....30@30&10%
Chisel .....60@60&10%
File and Awl.....60@60&10%
Saw and Plane.....30@30&10%
Screw Driver.....30@30&10%
Millers Falls Adj. and Ratchet Auger Handles .....15&10%
Nicholson Simplicity File Handle.... ℔ gro. $0.85@$1.50
J. L. Osgood:
Indestructible File and Tool, ℔ gro., No. 1, $8.00; No. 2, $8.50; No. 3, $9.00; No. 4, $9.50; No. 5, $10.00.....gro. lots 10%
W. A. Zelnicker Supply Co.:
Hammer, ℔ doz., 12 in., $2.00; 14 in., $2.00; 16 in., $2.30; 18 12., $2.50; 20 in., $2.70; 22 in., $3.00; 24 in., $3.30; 26 in., $3.50; 30 in., $3.80.
Sledge, ℔ doz., oval, 30 in., $3.80; octagon, 30 in., $3.80; oval, 36 in., $4.00; octagon, 36 in., $4.00.
Axe, ℔ doz., 28 to 34 in., $5.60; 36 in., $5.80.
Adze, ℔ doz., 36 in., $5,80; 36 in., $7.80.
Pick, ℔ doz., R. R., 36 in., $8.00; coal, 34 in., $5.80.
Hatchet, ℔ doz., 12 to 14 in., $2.00.
} 50%

Hangers—
NOTE.—Barn Door Hangers are generally quoted per pair, without track and Parlor Door Hangers per double set with track, &c.
Chicago Spring Butt Co.:
Friction 25%
Oscillating 25%
Big Twin.....25%
Chisholm & Moore Mfg. Co.:
Baggage Car Door.....50%
Elevator 30%
Railroad 50%
Cronk & Carrier Mfg. Co.:
Loose Axle.....60&10%
Roller Bearing.....70%
Griffin Mfg. Co.:
Solid Axle, No. 10, $12.00..60&10%
Roller Bearing, No. 11, $15.00, 60&10%
Roller Bearing, Ex. Hy., No. 22, $18.00.....60&10%
Bull Dog, $24.00.....70%
Lane Bros. Co.:
Parlor, Ball Bearing, $4.00: Standard, $3.15; No. 105, $2.85; New Model, $2.80; New Champion per set of 4 Hangers, complete with track.....$2.25
Barn Door, Standard.....60&10%
Hinged .....net $6.08
Covered .....60&5%
Special .....70&5%
Trolley Hangers and track..50%
Lawrence Bros.:
Cleveland .....70&7½%
Clipper, No. 75.....60%
Crown .....55&10%
Cyclone, No. 40.....net $6.50
Tandem, No. 50.....net $7.50
New York.....55&10%
Trolley, No. 30, ℔ pair.....$1.25
McKinney Mfg. Co.:
Roller Bearing, Nos. 1 and 2..70%
Anti-Friction 60%
Hinged Hangers, King Charm.60%
Richards Mfg. Co.:
Hangers, Nos. 47, 48, 147, 247, 60&5%
Pioneer Wood Track, No. 3..$2.25
Roller B'r'g St'l Track No. 12.$2.20
Roller B'r'g St'l Track No. 13,$2.50
Roller B'r'g, Nos. 39, 41, 43, 70&7½%
Hero, Adj. Track No. 19..50&10%
Adjustable Track Tandem Trolley Track No. 16.....50&10%
Seal, Steel Track No. 8.....$2.25
Auto Adj. Track No. 22..50&5%
Trolley B. D. No. 17, $1.25; F. D. No. 120, $2.25; No. 121, $2.45; No. 150.....$2.50
Safety Underwriters F. D. No. 101 .....50%
Tandem No. 44..2½ and 3 60&10%
Palace, Adjustable Track No. 132 .....50&5%
Royal, Adjustable Track No. 122 .....50&10%
Ives' Wood Track No. 1.....$2.25
Trolley B. D. No. 20..50&10%
Trolley B. D. No. 24, $1.30; No. 27, $1.40; No. 28.....$1.60
Roller Bearings, Nos. 37, 38, 39, 41, 43, 44, Sizes 1 and 2.70&7½%
Anti-friction, No. 42; No. 44, sizes 2½ and 3.....60%
Hinged Tandem No. 48....60&5%
Folding Door B. B, Swivel No. 135 .....40%
Taylor & Boggis F'y Co.'s Kidder's Roller Bearing, ℔ doz., 4 in., $12.00; 5 in., $14.00..40&10%
Myers' Stayon Hangers.....60%
Extra 5@10% often given.

Hangers— Garment—
Pullman Trouser, ℔ gro., No. 1 $9.00; No. 4, $24.00; No. 5, $16.50; No. 8, Black Enamel, $7.50; No. 10, $21.00; No. 12, $8.90; No. 15, Rods, $9.00; No. 18, Loops.....$10.00
Victor Folding.....℔ gro. $9.60

Gate—
Myers' Patent Gate Hangers, ℔ doz. net 50%

Joist and Timber—
Lane Bros. Co.....35%

Hasps—
Griffin's Security Hasp.....50&10%
McKinney's Perfect Hasp, ℔ doz..60%

Hatchets—
Regular list, first qual.40&12½@—
Second quality.....50&10&5@—

Heaters, Carriage—
Clark, No. 5, $1.25; No. 5B, $1.50; No. 3, $1.75; No. 3D, $2.00; No. 7D, $2.25; No. 3E, $2.50; No. 1, $3.00.....25%
Clark Coal, ℔ doz., $0.75.....20%

Hinges—
Blind and Shutter Hinges
Surface Gravity Locking Blind:
Doz. Sets with Fastenings, No. 1, $0.70; No. 3, $1.25; No. 5, $2.65.
Mortise Shutter.....80%
Mortise Reversible Shutter..80%
North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10%
Charles Parker Co.....70@75%
Parker Wire Goods Co.
Hale & Benjamin Automatic Blind Hinges 20%
Hale's Blind Awning Hinges, No. 110, for wood, $9.00; No. 111, for brick, $9.00.....20%
Reading's Gravity.....60%
Stanley's Steel Gravity Blind Hinges, No. 1647½, ℔ doz. sets, without screws, $0.95; with screws, $1.25.
Wrightsville Hardware Co.:
O. S., Lull & Porter.....75&5%
Acme, Lull & Porter.....75%
Queen City Reversible.....75%
Shepard's Noiseless, Nos. 60, 65, 55 .....75&5%
Niagara, Gravity Locking, Nos. 1, 3 & 5.....75&5%
Clark's O. P., No. 1.....75&10%
Clark's O. P., Nos. 3 and 5....75&5%
Tip Pat'n, No. 1.....75&10%
Clark's No. 3.....75&5%
Buffalo Gravity Locking, Nos. 1, 3 & 5.....70&10&5%
Shepard's Double Locking.....75%
Champion Gravity Locking....75&5%
Pioneer .....75&10%
Empire 65%
W. H. Co.'s Mortise Gravity Locking, No. 2.....60&10%

Gate Hinges—
Clark's or Shepard's—Doz. sets:

No.	1	2	3
Hinges with L'tchs.	$2.00	2.70	5.00
Hinges only	1.25	1.90	3.50
Latches only	.70	.75	.35

New England:
With Latch.....doz..@$2.00
Without Latch.....doz..@$1.60
Reversible Self-Closing:
With Latch.....doz..@$1.75
Without Latch...doz....@$1.35
Western:
With Latch.....doz. $1.75
Without Latch.....doz..$1.15
Wrightsville Hardware Co.:
Shepard's or Clark's Hinges and Latches, Hinges only or Latches only, Nos. 1, 2 or 3.....70%

Miscellaneous—
Griffin Mfg. Co., Fleur de Lis Surface Hinges, ℔ doz. prs.....$1.00

Pivot Hinges—
Bommer Bros. Pivot, Ball Bearing 40%
Lawson Mfg. Co. Matchless.....30%

Spring Hinges—
Holdback, Cast Iron...$6.75@$7.00
Non-Holdback, C'st Iron$6.50@$6.75
J. Bardsley:
Bardsley's Non-Checking Mortise Floor Hinges.....40%
Bardsley's Patent Checking.33⅓%
Bommer Bros.:
Spring Butt Hinges.....40%
Surface Floor, Ball Bearing 40%
Mortise Floor, Ball Bearing.40%
Lavatory Hinges.....40%
Non-Holdback Screen Door, Nos. 2000 and 900.....40%
Holdback Screen Door, No. 999.....℔ gro, $9.00
Chicago Spring Butt Co.:
Chicago Spring Hinges.....25%
Triple End Spring Hinges....50%
Chicago (Ball Bearing) Floor.50%
Garden City Engine House...25%
Keene's Saloon Door.....25%
Columbian Hardware Co.:
Acme, Wrought Steel.....30%
Acme, Brass.....25%
American 30%
Columbia, ℔ gr., No. 14, $9.00; No. 18.....$25.00
Columbia, Adj., No. 7, ℔ gr.$12.00
Gem, new list.....30%
Clover Leaf and Acorn, per gro, ...$12.00
Oxford, new list.....30%
Floor Spring Hinges.....65&10%
Columbian Steel.....65&10%
Lawson Mfg. Co.:
Matchless Spring Hinges.....30%
Matchless Jamb Hinges.....30%
Richards Mfg. Co.:
Superior Double Acting Floor Hinges 40%
Shelby Spring Hinge Co.:
Buckeye All Steel Holdback Screen Door.....℔ gr. $9.00
Chief Ball Bearings Floor Hinge 50%
Ball Bearing Door.....25%
No. 777, Sheet Steel Holdb'k, ℔ gr. pr.....$9.00
Standard Mfg. Co.:
Champion Double Acting Door Hinge .....25&10&10%
Standard Double Acting Floor Hinge .....25&10&10%
Superior Spring Hinge Co.:
Superior Floor Hinges.....33⅓%
Spring Hinges.....33⅓%
Extra 10% often given on most of these Hinges.

Wrought Iron Hinges—
Strap and T Hinges, &c., list February 10, 1908:
Light Strap Hinges..50&10%
Heavy Strap Hinges..60&5%
Light T Hinges.....50%
Heavy T Hinges.....40%
Extra Hvy. T Hinges.50&10%
Hinge Hasps.....33⅓%
Cor. Heavy Strap....60&5%
Cor. Ex. Heavy T...50&10%
Extra 10&7½%

Screw Hook and Strap.
6 to 12 in..lb. 3½¢
14 to 20 in..lb. 3¼¢
22 to 36 in..lb. 3 ¢

Screw Hook and Eye:
3, to 4 inch.....lb. 6¼¢
⅝-inch .....lb. 7½¢
½-inch .....lb. 8½¢

Hitchers, Stall—
Covert Mfg. Co., Stall Hitchers..30&2%

Hods— Coal—
M'f'gr's list, price per gross:

Inch	15	16	17	18
Galv. Open	$35	$39	$42	$46
Jap. Open	26	28	31	35
Galv. Funnel	48	48	52	56
Jap. Funnel	33	36	39	43

Net 75&10%

Masons' Etc.
Cleveland Wire Spring Co.:
Steel Brick, No. 162.....each $1.05
Steel Mortar, No. 158.....each $1.35

Hoes— Eye-

Scovil and Oval Pattern, 60&10@60&10&10%
Grub, list Feb. 23, 1899, 70&10@70&10&10%
D. & H. Scovil....27½%
Am. Fork & Hoe Co. (Scovil Pattern) ....60&5%

Handled—

Cronk's Weeding, No. 1, $2.00; No. 2, $2.50
Star Double Bit....$2.50
American Fork & Hoe Co.:
Regular, Cotton....75&10&5&2½%
Crescent, Cultivator....75&2½%
Mattock, Senior....70
Mattock, Junior....70
Sprouting....50%
Tobacco, Harper's....66⅔&15&10%
Warren....55&10&10&5%
Ivanhoe....65&15&10%
Cultivator, B B 6....70&10&10&5%
Cultivator, B B 6½....70&10&10&5%
Weeding, Acme....72½&10&2½%
Scuffle, Lightning....60&5%

Hoisting Apparatus—

See *Machines, Hoisting.*

Holders— Bit—

Angular, ₱ doz. $24.00....45&10%

Door—

Bardsley's, Iron, 40%; Brass and Bronze....25%
Empire....50%
Pullman....25%
Richards Mfg. Co.: No. 117, Ever-ready, 40%; Nos. 118, 119, Sure Grip....50%
Superior....33⅓%

File and Tool—

Nicholson File Holders and File Handles....33⅓&40%

Fruit Jar—

Triumph Fruit Jar Holder, ₱ gross, $18.00; ₱ doz....$2.00

Trace and Rein—

Fernald Double Trace Holder, ₱ doz. pairs....$1.25
Dash Rein Holder, ₱ doz....$1.25

Hones—Razor—

Pike Mfg. Co., Belgian and Swaty, 50%; German....33⅓%

Hooks—Cast Iron—

Bird Cage, Reading....40%
Clothes Line, Reading List....40%
Coat and Hat, Reading....45&20%
Coat and Hat, Wrightsville....60&5%
Harness, Reading List....40%

Wire—

Belt, Nos. 1 to 15....75&10@80%
Wire C. & H. Hooks..80@80&10%
Bradley Metal Clasp Wire, Coat and Hat, 75&10@80%; Ceiling..75&10@80%
Columbian Hdw. Co., Gem....75&10%
Parker Wire Goods Co., King..75&10%
Wire Goods Co.:
Acme, 60&10%; Chief, 70&10%; Crown, 75%; Czar, 65&10%; Brace, 75%; Czar Harness, 50%; Ceiling, 75%.

Wrought Iron—

Box, 6 in., per doz., $0.90; 8 in., $1.15.
Cotton....doz. $1.25@$1.50
Wrought Staples, Hooks, &c.—See Wrought Goods.

Miscellaneous—

Hooks, Bench, see *Stops, Bench.*
Bush, Light, doz., $6.20; Medium, $6.75; Heavy, $7.65
Grass, best, all sizes, per doz., $2.75@$3.00
Grass, common grades, all sizes, per doz....$1.25@$1.50
Whiffletree....lb. 5¾@6¢
Hooks and Eyes:
Brass....60@60&10%
Malleable Iron....70@70&10%
Covert Mfg. Co. Gate and Scuttle Hooks....40%
Turner & Stanton Co. Cup and Shoulder....85&10%
Bench Hooks—See Bench Stops.
Corn Hooks—See Knives, Corn.

Horse Nails—

See *Nails, Horse.*

Horseshoes—

See *Shoes, Horses.*

Hose, Rubber—

Garden Hose, ¾-inch:
Competition....ft. 6@6½¢
3-ply Guaranteed....ft. 8½@8¾¢
4-ply Guaranteed....ft. 9½@12¢
Cotton Garden, ¾-in., coupled:
Low Grade....ft. 8@ 9¢
Fair Quality....ft. 10@11¢

Irons— Sad—

From 4 to 10....lb. 2½@2¾¢
B. B. Sad Irons....lb. 3¼@3½¢
Mrs. Potts', cents per set:

	Nos.	50	55	60	65
Jap'd Caps		.86	93	96	93
Tin'd Caps		.91	88	1.01	98

New England Pressing..lb. 3¾@4¢

Bar and Corner—

Richards Mfg. Co., Bar, 60&10%; Corner....60%

Pinking—

Pinking Irons....doz. 60@65¢

Irons, Soldering

See *Coppers.*

Jacks, Wagons—

Covert Mfg. Co.:
Auto Screw....30&2%; Steel, 45%
Lockport....50%
Lane's Steel....30&5%
Richards' Tiger Steel, No. 130...50&10%
Smith & Hemenway Co.'s....25%

Ladder—

Richards Mfg. Co., Ladder Jacks..50%

Jointers—

Pike Mfg. Co., Saw Jointers, $7.00..40%

Kettles—

Brass, Spun, Plain....20@25%
Enameled and Cast Iron—See Ware, Hollow.

Knives—

Butcher, Kitchen, &c.—

Foster Bros.' Butcher, &c....30%
Wilkinson Shear & Cutlery Co....60%

Corn—

Columbian Cutlery Co., Wilcut Brand Knives and Hooks....60%
American Fork & Hoe Co.:
Easy Cut, ₱ doz., No. 10 C H...$2.10
Easy Cut, ₱ doz., No. 10 B C H..$2.20
Acme, ₱ doz....$2.35
Dent, ₱ doz....$2.35
Adjustable, Serrated, ₱ doz....$1.90
Serrated, ₱ doz....$1.85
Yankee, No. 1 C H....$1.35
Yankee, No. 2 C H....$1.15

Drawing—

Standard List....80&10@—%
C. E. Jennings & Co., Nos. 45, 46, 25&7½%
Jennings & Griffin, Nos. 41, 42, 66⅔&7½%
Swan's....66⅔@70%
Watrous....16⅔%
L. & I. J. White....20&5@25%

Hay and Straw—

Serrated Edge, per doz. $5.00@5.50
Iwan's Sickle Edge....₱ doz. $9.50
Iwan's Serrated....₱ doz. $10.00

Miscellaneous—

Farriers'....doz. $2.60@3.55
Wostenholm's....₱ doz. $3.00@3.25

Knobs—

Base, 2½-inch, Birch or Maple, Rubber Tip....gro. $1.25@1.40
Carriage, Jap., Drive, all sizes, gro. 35@40¢
Door, Mineral....doz. 65@70¢
Door, Por. Jap'd....doz. 70@75¢
Door, Por. Nickel..doz. $2.05@2.15
Bardsley's Wood Door, Shutters, &c. 15%

Lacing, Leather—

See *Belting, Leather*

Ladders, Store, &c.—

Lane's Store....25%
Myers' Noiseless Store Ladders....50%
Richards Mfg. Co.:
Improved Noiseless, No. 112....50%
Climax Shelf, No. 113....50%
Trolley, No. 109....50%

Ladles, Melting—

L. & G. Mfg. Co., Melting and Plumbers'....25%
P., S. & W....40&10%
Reading....60%

Lamps,—

Hammer's M. I. Hand....45%

Lanterns—Tubular—

Regular, No. 0....doz. $4.35@4.50
Side Lift, No. 0....doz. $4.60@4.75
Hinge Globe, No. 0. doz. $4.60@4.75
Other Styles....40@40&10%

Bull's Eye Police—

3-inch....$3.75@4.00

Latches— Thumb—

Roggin's Latches, Jap'd, with Screws....doz. 35@40¢

Door—

Cronk & Carrier Mfg. Co., No. 101, ₱ doz. $2.00
Richards' Bull Dog, Heavy, No. 125....50&5%
Richards' Trump, No. 127....$4.50

Leaders, Cattle—

Small....doz. 50¢; large, 60¢
Covert Mfg. Co.:
Cotton, 45%; Hemp, 45%; Jute, 35%; Sisal, 20%.

Leathers, Pump—

See *Pumps—*

Lifters, Transom—

R. & E....10%

Lines—

Wire Clothes, Nos.	*18*	*19*	*20*
100 feet	*$2.30*	*1.95*	*1.75*
75 feet	*$1.95*	*1.65*	*1.50*

Samson Cordage Works:
Solid Braided Chalk, Nos. 0 to 3..40%
Solid Braided Masons'....30%
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50....₱ gr. 20%
Masons' Lines, Shade Cord, &c.; White Cotton, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50; Colors, No. 3½, $1.75; No. 4, $2.25; No. 4½, $2.75; Linen, No. 3½, $2.50; No. 4, $3.50; No. 4½, $4.50....20%
Tent and Awning Lines: No. 5, White Cotton, $7.50; Drab Cotton, $8.50....20%
Clothes Lines, White Cotton: 50 ft., $2.75; 60 ft., $3.25; 70 ft., $3.75; 75 ft., $4.00; 80 ft., $4.25; 90 ft., $4.75; 100 ft., $5.25....20%
Turner & Stanton Co.:
Solid Braided Chalk, Masons' and Awning Lines....40%
Clothes Lines, White Cotton....20%
Shade Cord, Cotton or Linen....20%

Locks— Cabinet—

Cabinet Locks....33⅓@33⅓@5%

Door Locks, Latches, &c.—

NOTE.—Net Prices are very often made on these goods.
Reading Hardware Co....40%
R. & E. Mfg. Co....10%

Padlocks—

R. & E. Mfg. Co. Wrought Steel and Brass....75&10%

Sash, &c.—

Ives' Patent:
Crescent....10%
Automatic Gravity Metal Sash, ₱ gro., $149.58....10%
Window Ventilating....10%
Pullman Patent Ventilating Lock..25%
Reading Sash Locks....40%
Taylor Mfg. Co., Perfect Ventilating, ₱ doz....$0.75@$1.00

Machines—Boring—

Com. Upr't, without Augers, $2.00@2.25
Com. Angl'r, without Augers, $2.25@2.50
Ford Auger Bit Co....$22.00
Jennings', Nos. 1 and 4....25&7½%
Millers' Falls....5.75
Snell's, Upright, $2.65; Angular, $2.90
Swan's Improved....40&10%

Corking—

Reisinger Invincible Hand Power... ₱ doz. $48.00

Fence—

Williams' Fence Machines....each, $5.50

Hoisting—

Moore's Anti-Friction Chain Hoist..30%
Moore's Hand Hoist, with Lock Brake....20%
Moore's Cyclone High Speed Chain Hoist....25%

Ice Cutting—

Chandler's....12½%

Washing

Boss Washing Machine Co.:	Per doz.
Boss No. 1	$57.00
Boss Rotary	$57.00
Champion Rotary Banner No. 1	$57.00
Standard Champion No. 1	$50.00
Standard Perfection	$27.00
Cincinnati Square Western	$33.00
Uneeda American, Round	$33.60

Mallets—

Hickory....45&5@50%
Lignumvitæ....45&5@50%
Tinners' Hickory and Applewood....doz. 45&5@50%

Mangers, Stable—

Swett Iron Works....50%

Mats, Door—

Acme Flexible Steel....50%
Elastic Steel (W. G. Co.), new list..50%

Mattocks—

See *Picks and Mattocks.*

Milk Cans—See *Cans, Milk.*

Mills, Coffee, &c.—

Enterprise Mfg. Co.:
Coffee....20@25%
Shell and Corn....25&10%
National list Jan. 1, 1902....30%
Parker's Columbia and Victoria..33⅓%
Parker's Box and Side....50&10%
Swift, Lane Bros. Co....30%

Motors, Water—

Divine's Red Devil....30%

$2.50	3.50	10.00	15.00....33⅓%
No. 1.	2	3	4

Lippincott's:

No....	1	2	3	4
	$2.50	3.50	10.00	15.00..33⅓%

Pike Mfg. Co., Tool and Knife Grinding....33⅓%

Mowers, Lawn—

NOTE.—Net prices are generally quoted
Cheapest, 10-in., $2.00; advance 10¢ for each size.
Cheap, 10-in., $2.25; advance 15@20¢ for each size.
Better Grade, 10-in., $3.00; advance 25¢ for each size.

	12	*14*	*16*	*18 in.*
High Grade...	*$4.50*	*4.75*	*5.00*	*5.25*

Continental....60%
Great American....70%
Great American Ball B'r'g, new list..70%
Quaker City....70%
Pennsylvania....60%
Pennsylvania, Jr., Ball Bearing, 50&10&5%
Pennsylvania Golf....50%
Pennsylvania Horse....33⅓&5%
Pennsylvania Pony....40&5%

Nails—

Wire Nails and Brads, Miscellaneous....85&5@85&10%
Cut and Wire. See *Trade Report.*
Hungarian, Finishing, Upholsterers', &c. See *Tacks.*

Horse—

Nos.	6	7	8	9	10	
Anchor	23	21	20	19	18	₱ lb. net, 12¢
Coleman	13	12	12	11	11	net ₱ lb
New Haven..	23	21	20	19	18	₱ lb. net, 12¢
Livingston	19	18	17	16	16	10%
Western						₱ lb 8½¢

Jobbers' Special Brands, per lb. 9¢

Picture—

	1½	*2*	*2½*	*3 in.*
Brass Hd. gro.	*.45*	*.55*	*.60*	*.70*
Por. Head, gro.	*1.10*	*1.10*	*1.10*	*1.10*

Upholsters—

Brass....30%
Plated....30&10%

Nippers—

See *Pliers and Nippers.*

Nipples—

Standard Nipple Co.:
Wrought Pipe Nipples....80%

Nuts— *Blank or Tapped.*

Cold Punched:	*Off list.*
Square	*5.60¢*
Hexagon	*6.20¢*
Square, C., T. & R.	*6.00¢*
Hexagon, C., T. & R.	*6.80¢*
Hot Pressed:	
Square	*6.10¢*
Hexagon	*6.60¢*

Oakum—

Best....lb. 6½¢
U. S. Navy....lb. 6 ¢
Navy....lb. 5 ¢
Plumbers' Spun Oakum..2¾@3 ¢

Oil—

Pike Mfg. Co., Stonoil....40%

Oil Tanks—See *Tanks, Oil.*

Oilers—

Steel, Copper Plated....75%
Chase or Paragon:
Brass and Copper....50&10%
Zinc....65&10@70%
Railroad....60&10&10%
Malleable, Hammers' Improved, Nos. 11, 12 and 13, 10%; Old Pattern, Nos. 1, 2, 3, 4, 50%.
American Tube & Stamping Co.:
Spring Bottom Cans....70@70&10%
Railroad Oilers, &c....60@60&10%
Maple City Mfg. Co.:
Spring Bottom Cans....70@70&10%
Railroad Oilers, &c....60@60&10%

Openers—Packing Box—

Herculever, ₱ doz., $24....30%

Can Openers—

	Per doz.
Sprague, Iron Handle....	*30@35¢*
Sprague, Wood Handle....	*40¢*
Sardine Scissors....	*$1.75@3.00*

Can and Bottle Openers, ₱ doz., net: Yankee, $0.75@$0.85; Little Gem, $0.50@$0.65; Nifty....$0.75

Egg—

Hartigan Nickel Plate, ₱ doz., $2.00; Silver Plate, $4.00.

Packing—

Asbestos Packing, Wick and Rope, any quantity....18@20¢

Rubber—

(Fair quality goods.)

Sheet, C. I.	*11@12¢*
Sheet, C. O. S.	*11@12¢*
Sheet, C. B. S.	*12@13¢*
Sheet, Pure Gum	*40@45¢*
Sheet, Red	*40@50¢*
Jenkins' '96, ₱ lb, 80¢	25%

Miscellaneous—

American Packing....lb. 7@10 ¢
Cotton Packing....lb. 16@25 ¢
Italian Packing....lb. 9@10¢
Jute....lb. 4@4¼¢
Russia Packing....lb. 9@10¢

Pails, Water, Well, &c.—

See *Buckets.*

Paint—

Dixon's Silica-Graphite, in 1 gal. pails and 5 gal. kegs, 25%; packages of larger size....20%

Pans— Dripping—

Standard List....75&10@80%
Edwards, Royal Blue....75%

Fry—

Common Lipped:

Nos....	*1*	*2*	*3*	*4*	*5*
Per doz....	*$0.75*	*0.85*	*0.95*	*1.15*	*1.30*

Refrigerator, Galva.—

Inch....	*12*	*14*	*16*	*18*
Per doz....	*$1.75*	*2.25*	*2.80*	*3.15*

Paper—Building Paper

Asbestos: lb.
Roll Board or Building Felt, 6 to 30 lb., per 100 sq. ft...2¼¢
Roll Board or Building Felt, 3-32 and ⅛ in., 45 to 60 lb., per 100 sq. ft....3½¢
Mill Board, Sheet, 40 x 40 in., 1-32 to ½ in....3¢
Per roll.
Rosin Sized Sheathing: 500 sq. ft.
Light weight, 25 lbs. to roll, 48@58¢
Medium weight, 30 lbs. to roll, 56@70¢
Heavy weight, 40 lbs. to roll, 75@78¢
Black Water Proof Sheathing, 500 sq. ft., 1 ply, 65¢; 2 ply, 85¢; 3 ply, $1.10; 4 ply, $1.25.
Deafening Felt, 9, 6 and 4½ sq. ft. to lb., ton....$54.50
Red Rope Roofing, 250 sq. ft. per roll....$4.75

Tarred Paper—

1 ply (roll 400 sq. ft.), ton, $34.00@$38.00
2 ply, roll 108 sq. ft....65¢
3 ply, roll 108 sq. ft....88¢
Slater's Felt (roll 500 sq. ft.) 80¢

Sand Paper and Cloth—

Flint and Emery....50&10%
Garnet Paper and Cloth....25%

Parers—Apple—

Goodell Co.:

Family Bay State	₱ doz.	$15.00
Improved Bay State	₱ doz.	$36.00
New Lightning	₱ doz.	$7.00
Turn Table '98	₱ doz.	$6.00
White Mountain	₱ doz.	$5.00
Ronanza Improved	each	$7.50
Dandy	each	$10.00
Eureka Improved	each	$20.00
New Century	each	$20.00
Ranger	each	$30.00

Livingston Nail Co.:
Daisy ..... ℔ doz. $4.00
Little Star ..... ℔ doz. $5.00
Rocking Table ..... ℔ doz. $6.20
Reading Hardware Co.:
Advance ..... ℔ doz. $4.00
Baldwin ..... ℔ doz. $4.00
Reading 72 ..... ℔ doz. $3.25
Reading 78 ..... ℔ doz. $6.25

Orange—
Goodell Co., Success ..... each $20.00

Potato—
Saratoga ..... ℔ doz. $7.60
White Mountain ..... ℔ doz. $6.00

Picks and Mattocks—
(List Jan., 1908.)
List ..... 75&10%
Cronk's Handled Garden Mattock, ℔ doz., $3.00 ..... 33⅓%

Pinking Irons—
See *Irons, Pinking.*

Pins, Escutcheon—
Brass ..... 50@50&10%
Iron, list Nov. 11, '85 .. 60@60&10%

Pipe, Cast Iron Soil—
Standard, 2-6 in. ..... 70&10%
Extra Heavy, 2-6 in. .. 75&10@80%
Fittings, Standard and Heavy, 80&10@85%

Pipe, Merchant—

	Consumers, Carloads, Steel. Blk.	Galv.	*Iron.* Blk.	Galv.
	%	%	%	%
⅛ and ¼ in.	66	50	64	
⅜ in.	68	54	66	52
½ in.	70	58	68	56
¾ to 6 in.	74	64	72	62
7 to 12 in.	71	56	69	54

Pipe, Vitrified Sewer—
Carload lots.
Standard Pipe and Fittings, 3 to 24 in., f.o.b. factory:
First-class 87%
Second-class 90%

Pipe, Stove—

Edwards' Nested:	Per 100 joints. C. L.	L. C. L.
5 in., Standard Blue	$6.25	$7.25
6 in., Standard Blue	6.75	7.75
7 in., Standard Blue	7.75	8.75
8 in., Royal Blue	7.00	8.00
8 in., Royal Blue	7.50	8.50
7 in., Royal Blue	8.50	9.50
Wheeling Corrugating Co.'s Nested:		
5 in., Uniform Color	$5.90	$6.90
6 in., Uniform Color	6.40	7.40
7 in., Uniform Color	7.40	8.40

Planes and Plane Irons—
Wood Planes—
Bench, first qual. ..... 30@30&10%
Bench, second qual. .. 40@40&10%
Molding ..... 25@25&10%
Chapin-Stephens Co.:
Bench, First Quality 30%
Bench, Second Quality 40%
Molding and Miscellaneous 25%
Toy and German 30%
Union 60%

Iron Planes—
Chaplin's Iron Planes 60%
Union 60%

Plane Irons—
Wood Bench Plane Irons, list Dec. 12, '06 ..... 25%
Buck Bros. 30%
Chapin-Stephens Co. 25%
Union 50%
L. & I. J. White ..... 20&5@25%

Planters, Corn, Hand—
Kohler's Eclipse ..... ℔ doz. $7.50

Plates—
Felloe ..... lb. 3¾@4¢
Avery Stamping Co.:
Standard Wrot, Steel Felloe Plates in 100 lb kegs, per 100 lb, ¾-in. to 1¼-in., $4.00 net; 1¼-in. to 2-in., inclusive, $3.75 net.

Steel Pipe Hook—
Never-Break ..... 75&10%

Pliers and Nippers—
Button Pliers .... 75&5@75&10&5%
Gas Burners, per doz., 5 in., $1.25 @$1.30; 6 in., $1.45, $1.50.

Gas pipe.. 7	8	10	12-in.
	$2.00	$2.25	$2.75	$3.50

Acme Nippers ..... 50&5%
Cronk & Carrier Mfg. Co.:
American Button 80%
Improved Button ..... 75&10%
Cronk's 60%
No. 89 Linemen's 50%
Stub's Pattern 45%
Combination and others 33⅓%
Heller's Farriers' Nippers, Pincers and Tools ..... 40&5@40&10&5%
P., S. & W. Tinners' Cutting Nippers 40%
Swedish Side, End and Diagonal Cutting Pliers 50%
Utica Drop Forge & Tool Co.:
Pliers and Nippers, all kinds 40%

Plumbs and Levels—
Chapin-Stephens Co.:
Plumbs and Levels ..... 30@30&10%
Chapin's Imp. Brass Cor. 40@40&10%
Pocket Levels ..... 30@30&10%
Extension Sights ..... 30@30&10%
Machinists' Levels ..... 40@40&10%
Disston's Plumbs and Levels .... 60&10%
Disston's Pocket Levels ..... 60&10%
Stanley's Dulex 35%
Woods' Extension 33⅓%

Points, Glaziers'—
Bulk and 1-lb. papers .... lb. 9 ¢
½-lb. papers ..... lb. 9½¢
¼-lb. papers ..... lb. 10 ¢

Police Goods—
Manufacturers' Lists .. 25@25&5%
Tower's 25%

Polish—Metal, Etc—
Ladd Co.:
Putzade Liquid, ℔ gro., ½ pts., $12.00; 1 pts., $20.00; 1 qts., $40.00; ℔ doz., ½ gals., $6.35; 1 gals., $12.00.
Prestoline Liquid, No. 1 (⅛ pt.), ℔ doz., $3.00; No. 2 (1 qu.), $9.00 .. 40%
Prestoline Paste 40%
George William Hoffman:
U. S. Metal Polish Paste, 3 oz. boxes, ℔ doz. 50¢; ℔ gro. $4.50; ½ lb boxes, ℔ doz. $1.25; 1 lb boxes, ℔ doz. $2.25.
U. S. Liquid, 8 oz. cans, ℔ doz., $1.25.
Barkeepers' Friend Metal Polish, ℔ doz., $1.75.

Stove—
Black Eagle Benzine Paste, 5 lb cans, ℔ lb 10¢
Black Eagle, Liquid, ½ pt. cans.. ℔ doz. 75¢
Black Jack Paste, ¾ lb cans, ℔ gr. $3.00
Black Kid Paste, 5 lb can ..... each, $0.65
Ladd's Black Beauty Liquid, per 100 tins $6.75
Joseph Dixon, ℔ gr. $5.75 ..... 10%
Dixon's Plumbago ..... ℔ lb 8¢
Fireside ..... ℔ gr. $2.50
Gem, ℔ gr. $4.50 ..... 10%
Japanese ..... ℔ gr. $3.50
Jet Black ..... ℔ gr. $3.50
Peerless Iron Enamel, 10 oz. cans.. ℔ doz. $1.50

Window Polish—
Benj. P. Forbes:
Glasbright, No. 2, gal pails, ℔ doz., $24.00; each, $2.50; 1 lb cans, each ..... 75¢
Glasbright Powder, bbls., ℔ lb .. 20¢

Poppers, Corn—
1 qt. Square..doz. $0.80; gro. $8.75
1 qt. Round..doz. $0.90; gro. $10.00
1½ qt. Square..doz. $1.20; gro. $12.00
2 qt. Square..doz. $1.50; gro. $15.00

Post Hole and Tree Augers and Diggers—
See also *Diggers, Post Hole, &c.*

Posts, Steel—
Steel Fence Posts, each, 6 ft., 46¢; 6½ ft., 48¢; 7 ft., 50¢.
Steel Hitching Posts ..... each $1.30

Potato Parers—
See *Parers, Potato.*

Pots, Glue—
Enameled 40%
Tinned ..... 30&10%

Powder—
In Canisters:
Duck, 1 lb ..... each 45¢
Fine Sporting, 1 lb .... each 75¢
Rifle, ½-lb ..... each 15¢
Rifle, 1 lb ..... each 25¢
In Kegs:
12½-lb. kegs $3.50
25-lb. kegs $4.50
King's Semi-Smokeless:
Keg (25 lb bulk) $6.50
Half Keg (12½ lb bulk) $3.50
Quarter Keg (6¼ lb bulk) $1.90
Case 24 (1 lb cans bulk) $8.50
Half case (1 lb cans bulk) $4.50

King's Smokeless:	Shot Gun.	Rifle.
Keg (25 lb bulk)	$12.00	$15.00
Half Keg (12½ lb bulk)	6.25	7.75
Quarter Keg (6¼ lb bulk)	3.25	4.00
Case 24 (1 lb cans bulk)	14.00	17.00
Half case 12 (1 lb c. bk)	7.25	8.75

Presses—
Fruit, Wine and Jelly—
Enterprise Mfg. Co. ..... 20@25%

Seal Presses—
Morrill's No. 1, ℔ doz., $20.00 ..... 50%

Pruning Hooks and Shears
See *Shears.*

Pullers, Nail, Etc.—
Cyclops 50%
Miller's Falls, No. 3, ℔ doz., $12.00 .. 33⅓&10%
Morrill's No. 1, Nail Puller, ℔ doz. $20.00 ..... 50%
Pearson No. 1, Cyclone Spike Puller, each $30.00 ..... 50%
The Scranton Co. Case Lots:
No. 2B (large) $5.50
No. 3B (small) $5.00
Smith & Hemenway Co.:
Diamond B 70%
Giant 50%
Staple Pullers, Utica and Darlington 60%
Taylor Mfg. Co., Sampson Tack, ℔ doz. $0.40

Pulleys, Single Wheel—

Inch	1½	1¾	2	3
Awning or Tackle, doz.	$0.30	.45	.60	1.05
Hay Fork, Swivel or Solid Eye, doz., ¼ in., $1.25; 5 in., $1.55				
Inch	2	2¼	2½	
Hot House, doz.	$0.65	.85	1.20	
Inch	1¼	1½	1¾	2
Screw, doz.	$0.16	.19	.23	.30
Inch	1¾	2	2¼	2½
Side, doz.	$0.25	.40	.55	.60
Inch	1½	1¾	2	2½

Sash Pulleys—
Common Frame; Square or Round End, per doz., 1¾ and 2 in. ..... 17@20¢
Auger Mortise, no Face Plate, per doz., 1¾ and 2 in. .... 20@21¢
Acme, No. 35..1¾ in., 19¢; 2 in., 20½¢
American Pulley Co.:
Wrought Steel American Plain Axle ..... 50&10%
Wrought Steel, Eagle ..... 17@20¢
Top Notch, Electrically Welded, Nos. 3 and 4 ..... 19¢
Common Sense ..... ℔ doz. 20¢
Fox-All-Steel, Nos. 3 and 7, 2 in.... ℔ doz. 50%
Grand Rapids All Steel Noiseless .. 50%
Niagara, No. 25, 1¾ in., 19¢; 2 in. ..... 20½¢
No. 26 Troy..1¾ in., 14½¢; 2 in., 16½¢
Star, No. 25....1¾ in., 19¢; 2 in., 20½¢
Tackle Blocks—See Blocks.

Pumps—
Cistern 60%
Pitcher Spout ..... 75&5@75&10%
Wood Pumps, Tubing, &c. 50%
Barnes Dbl. Acting (low list) 50%
Barnes Pitcher Spout 80%
Contractors' Rubber Diaphragm, No. 2, B. & L. Block Co. $16.00
Daisy Spray Pump ..... ℔ doz. $6.50
Flint & Walling's Fast Mail Hand (low list) ..... 50&5%
Flint & Walling's Fast Mail (low list) ..... 50&5%
Flint & Walling's Tight Top Pitcher 80%
National Specialty Mfg. Co., Measuring, Nos. 2, $6.00; 3, $5.50 ..... 30%
Myers' Pumps (low list) ..... } 50%
Myers' Power Pumps ..... }
Myers' Spray Pumps ..... }

Pump Leathers—
Plunger and Valve Leathers—Per gro.:

No.	1	2	3	4	} 30%
	$5.00	6.00	7.00	8.00	
Cup Leathers—Per 100:					
Inch	2½	3	3½	4	} 30%
	$5.00	7.00	9.00	12.00	

Punches—
Saddlers' or Drive, good, ... doz. 50@75¢
Spring, single tube, good quality $1.75
Revolving (4 tubes) .... doz. $3.50
Bemis & Call Co.'s Cast St'l Drive. 50%
Morrill's Nos. 1AA, 1A, 1B, 1C, 1D, $15.00 ..... 50%
Hercules, 1 die, each $5.00 ..... 50%
Niagara Hollow Punches 40%
Niagara Solid Punches ..... 55&10%
Tinners' Hollow, P., S. & W. Co. .. 40%
Tinners' Solid, P., S. & W. Co., ℔ doz., $1.44 ..... 40&10%

Rail—Barn Door, &c.—
Sliding Door, Painted Iron, ... 2½@2¾¢
Sliding Door, Wrought Brass, 1½ in., lb., 36¢ 30%
Cronk's:
Double Braced Steel Rail..℔ ft. 2¾ ¢
O. N. T. Rail ..... 2¾ ¢
Griffin's:
xxx, ℔ 100 ft., 1 x 3-16 in., $3.25; 1¼ x 3-16 in., $3.75.
Hinged Hanger, ℔ 100 ft., 1 x 3-16 in., $3.50; 1¼ x 3-16 in., $4.00.
Lane's:
Hinged Track, ℔ 100 ft. $3.45
O. N. T., ℔ 100 ft., 1 in., $3.12½; 1¼ in., $3.45; 1½ in., $4.00.
Standard, 1¼ in. ..... ℔ 100 ft. $4.00
Lawrence Bros.:
1 x 3-16 in., ℔ 100 ft., $7.50; 1¼ x 3-16 in., $8.75 ..... 55&7½%
Trolley, No. 301, ℔ ft. ..... 9¢
McKinney's:
Hinged Hanger Track, ℔ ft., 11¢ .. 60&5%
1 x 3-16 Track ..... 55&7½%
Myers' Stayon Track ..... 60&5%
Richards Mfg. Co.:
Common, 1 x 3-16 in., $3.00; 1¼ x 3-16, $3.25; 1¼ x 3-16, $3.50.
Special Hinged Hanger Rail..60&10%
Lag Screw Rail, No. 65 ..... 50%
Gauge Trolley Track, ℔ ft., No. 31, 9¢; No. 32, 11¢; No. 33, 20¢.
No. 50 ..... 60&10%
Nos. 61, $3.00; 62, $3.25; 63, $3.50; 64, $4.00; 45, $3.25; 46, $3.50; 49, No. 1, $3.25; 49, No. 2, $3.50.

Rakes—
NOTE.—Many goods are sold at net prices.
American Fork & Hoe Co.:
Lawn, ℔ doz., No. 24, $2.50; No. 20 ..... $2.25
Cronk's:
Steel Garden: Champion, ℔ doz., 12-tooth, $3.75; 14-tooth, $4.00; 16-tooth, $4.25; Ideal, ℔ doz., 12-tooth, $3.00; 14-tooth, $3.30; 16-tooth, $3.60.
Victor, 12-tooth, $2.25; 14-tooth, $2.50; 16-tooth, $2.75.
Queen City Lawn, ℔ doz., 20 teeth, $2.85; 24, $3.00 ..... net
Anticlog Lawn, ℔ doz. $4.00
Malleable Garden ..... 70&10%
Ideal Steel Garden, ℔ doz., 12 teeth, $15.00; 14, $16.00; 16, $18.00 ..... 80%
Kohler's:
Jumbo Lawn, 36-tooth ..... ℔ doz. $5.00
Lawn Queen, 20-tooth ..... ℔ doz. $2.85
Lawn Queen, 24-tooth ..... ℔ doz. $3.00
Paragon, 20-tooth ..... ℔ doz. $2.65
Paragon, 24-tooth ..... ℔ doz. $2.75
Steel Garden, 14-tooth ..... ℔ doz. $2.40
Malleable Garden, 14-tooth, ℔ doz. $1.75@2.00

Rasps, Horse—
Disston's 75%
Heller Bros. ..... 70&5@70&10&5%
Liveright Bros.' Gold Medal. 70&10@75%
McCaffrey's American Standard ..... 60&10&5%
New Nicholson ..... 70&10@75%
See also Files.

Razors—
John Engstrom Swedish 65%
Sharp Shaver 60%
Fox Razors, ℔ doz., No. 42, $24.00; No. 44, $20.00; No. 82, Platina, $36.00. } Dis. 50%

Reels, Fishing—
Hendryx:
M 6, Q 6, A 6, B 6, M 9¼, M 16, Q 16, A 16, B 16, 4008, Rubber, Populo, Nickeled Populo 20%
Aluminum, German Silv., Bronze. 25%
1210 N, 124 N 20%
3004 N, 06 N, 6 RM, G 9 ..... 25%
4 N, 6 PN, 24 N, 26 PN 20%
2904 P, 33⅓%; 2904 PN., 33⅓%; 0924 N., 33⅓%; 02084 N., 33⅓%; 002904 PN., 33⅓%; 802 N., 33⅓%; 986 PN, 2904 N, 974 PN 25%
5009 PN, 5009 N 20%
Competitor, 102 P, 102 PN, 202 P, 202 PN, 102 PR, 202 PR 20%
304 P, 304 PN, 00304 P, 00304 PN. 33⅓%

Registers—*List July 1, 1903.*
Japanned, Electroplated and Bronzed 70%
White Porcelain Enamel.. 50&10%
Solid Brass or Bronze Metal. 40%

Revolvers—
Single Action ..... 95¢@$1.00
Double Action, except 44 cal. $2.00
Double Action, 44 caliber... $2.00
Automatic $4.00
Hammerless $4.50

Riddles, Hardware Grade—
16 in. ..... *per doz.* $2.50@$2.75
17 in. ..... *per doz.* $2.75@$3.00
18 in. ..... *per doz.* $3.00@$3.25

Rings and Ringers—
Bull Rings—

	2	2½	3 inch.
Steel	$0.70	0.75	0.80 doz.
Copper	$1.10	1.25	1.65 doz.

Hog Rings and Ringers—
Hill's Rings, gro. boxes $4.50@$4.50
Hill's Ringers, Gray Iron, doz., 60@75¢
Hill's Ringers, Malleable Iron, doz. 80@95¢
Blair's Rings..per gro. $5.00@$5.50
Blair's Ringers...per doz. 75@90¢

Rivets and Burrs—
Copper ..... 50@50&10%
Carriage, Coopers', Tinners', &c.:
Black ..... 70&10%
Metallic Tinned 70%

Bifurcated and Tubular—
Assorted in Boxes.
Bifurcated, per doz. boxes, pasteboard boxes, 50 count, 23@25¢; Tin boxes, 100 count, 29@32¢.
Tubular, per doz. boxes, 50 count, 29@32¢; 100 count, 51@58¢.

Rollers—
Cronk's Stay, No. 50 ..... $1.00
Cronk's Brinkerhoff No. 55, $0.60; No. 56, $0.75; No. 60 ..... $0.75
Lane's Stay 40%
Richards' Stay:
Handy Adj. and Reversible No. 53.75¢
O. K. Adj. and Reversible No. 58.50¢
Lag Screw, Nos. 55 and 57 ..... 50%
Underwriters', Nos. 59, 60 ..... 50%
Favorite, No. 54 ..... 60%

Rope—
Manila, 7-16 in. diam. and larger: Pure ..... lb. 9¢
Sisal, 7-16 in. diam. and larger: Pure ..... lb. 7¢
Sisal, Hay, Hide and Bale Ropes, Medium and Coarse: Pure ..... lb. 7½@7¾¢
Sisal, Tarred, Medium Lath Yarn: Pure ..... lb. 6½@6¼¢
Cotton Rope:
Best, ¼-in. and larger. 16½@18¢
Medium, ¼-in. and larger. 15@16¢
Common, ¼-in. and larger.. 7½¢
In coils, ½¢ advance.
Jute Rope:
Thread, No. 1, ¼-in. and up, lb. ..... 5½¢
Thread, No. 2, ¼-in. and up, lb. ..... 5¢

Wire Rope—
Galvanized ..... 37½&2½%
Plain ..... 45&2½%

Ropes, Hammock—
Covert Mfg. Co.:
Jute, 35%; Sisal 20%

Rules
Boxwood ..... 60@60&10%
Ivory ..... 35&10@35&10&5%
Chapin-Stephens Co.:
Boxwood 60%
Flexifold 40%
Ivory ..... 25@25&10%
Miscellaneous ..... 50@50&10%
Stephens' Combination 55%
Stationers' ..... 50@50&10%
Keuffel & Esser Co.:
Folding, Wood ..... 35&10%
Folding, Steel ..... 33⅓&10%
Lufkin's Steel ..... 50&10%
Lufkin's Lumber ..... 50&10%
Upson Nut Co.:
Boxwood ..... 60@60&10%
Ivory ..... 35&10@35&10&10%

Sash Balances—
See *Balance, Sash.*

Sash Locks—See *Locks, Sash.*

Sash Weights—
See *Weights, Sash.*

Sausage Stuffers or Fillers
See *Stuffers or Fillers, Sausage.*

Saw Frames—
See *Frames, Saw.*

Saw Sets—See *Sets, Saw.*

Saw Tools—See *Tools, Saw.*

Saws—
Atkins':
Circular 45%
Band ..... 50&10&10%
Butcher Saws 50%
Cross Cuts 35%
One-Man Cross Cut 40%
Narrow Cross Cut 50%
Hand, Rip and Panel ..... 35&5%
Miter Box and Compass 40%
Mulay, Mill and Drag 45%
Wood Saws ..... 40&10%
Chapin-Stephens Co.:
Turning Saws and Frames ..... 30&30&10%
Diamond Saw & Stamping Works:
Sterling Kitchen Saws ..... 30&10&10%
Disston's:
Circular, Solid and Ins'ted Tooth 50%
Band, 2 to 18 in. wide 60%
Band, ¼ to 1¾ 60%
Crosscuts 45%
Narrow Crosseuts 50%
Mulay, Mill and Drag 50%
Framed Woodsaws 25%
Woodsaw Blades 25%
Woodsaw Rods, Tinned 15%
Hand Saws, Nos. 12, 99, 9, 16, d100, D8, 120, 76, 77, 8 ..... 25%
Hand Saws, Nos. 7, 107, 107½, 3, 1, 0, 00, Combination 30%
Compass, Key Hole, &c. 25%
Butcher Saws and Blades 30%
C. E. Jennings & Co.'s:
Back Saws 16⅔%
Butcher Saws ..... 25&7½%
Compass and Key Hole Saws ..... 33⅓&7½%
Framed Wood Saws ..... 25&7½%
Hand Saws 12½%
Wood Saw Blades ..... 33⅓&7½%
Millers Falls:
Butcher Saws ..... 15&10%
Star Saw Blades ..... 15&10%
Massachusetts Saw Works:
Victor Kitchen Saws ..... 40&10&50%
Butcher Saws Blades ..... 35@40%
Peace & Richardson's Hand Saws 30%
Simonds':
Circular Saws 45%
Crescent Ground Cross Cut Saws 30%
One-Man Cross Cuts ..... 40&10%
Gang Mill, Mulay and Drag Saws 45%
Band Saws 50%
Back Saws ..... 25@25&7½%
Butcher Saws ..... 35@35&7½%
Hand Saws ..... 25@25&7½%
Hand Saws, Bay State Brand 45%
Compass, Key Hole, &c. ..... 25@25&7½%
Wood Saws ..... 40&7½%
Wheeler, Madden & Clemson Mfg. Co.'s Cross Cut Saws 50%

Hack Saw Blades and Frames—
Atkins' Hack Saw Blades A A A .. 25%
Disston's:
Concave Blades 25%
Keystone Blades 35%
Hack Saw Frames 30%
Simonds, 25%; The Best, 35%; Culley 35%
C. E. Jennings & Co.'s:
Hack Saw Frames, Nos. 175, 180 .... 40&7½%
Hack Saws, Nos. 175, 180, complete ..... 40&7½%
Goodell's Hack Saw Blades .... 40&10%
Griffin's Hack Saw Frames .. 35&5&10%
Griffin's Hack Saw Blades .... 35&5&10%
Star Hack Saws and Blades .... 15&10%
Sterling Hack Saw Blades .. 30&10&5%
Sterling Hack Saw Frames .. 30&10&10%
Sterling Power Hack Saw Machines, each, No. 1, $25.00; No. 2, $30.00 .. 10%
Victor Hack Saw Blades 20%
Victor Hack Saw Frames 40%
Whitaker Mfg. Co.:
National Hand Blades, Hand Frames, Power Blades 40%

Scroll—
Barnes, No. 7, $15 ..... 25%
Barnes' Scroll Saw Blades 40%
Barnes' Velocipede Power Scroll Saw, without boring attachment, $18; with boring attachment, $20 ..... 20%
Lester, complete, $10.00 ..... 15&10%
Rogers, complete, $3.50 and $4.00 .. 15&10%

Scales—
Union Platform, Plain ..... $2.10@2.20
Union Platform, Stpd ..... $2.20@2.30
Chatillon's:
Eureka 25%
Favorite 40%
Grocers' Trip Scales 50%
The Standard Portables 40%
The Standard R. R. and Wagon ..... 50&10%

Scrapers—
Box, 1 Handle ..... doz. $1.85@2.10
Box, 2 Handle ..... doz. $2.35@2.50
Ship ... Light, $2.00; Heavy, $1.50
Chapin-Stephens Co., Box .. 30@30&10%
Richards Mfg. Co., Foot 60%

Screws—Bench and Hand
Bench, Iron, doz., 1 in., $2.50@2.75; 1½ ... $3.00@3.25; 1¼ ... $3.50@3.75
Bench, Wood ..... 20@20&10%
Hand, Wood ... 70&10@70&10&10%
Chapin-Stephens Co., Hand ..... 70@70&10&2½%

Coach, Lag and Hand Rail—
Lag, Cone Point .. 80&10@80&10&5%
Coach, Gimlet Point .. 80@80&10%
Hand Rail ..... 70&10@75%

Jack Screws—
Standard List ..... 70&10@75%
Millers Falls ..... 50&10&10%
Swett Iron Works ..... 70@75%

Machine—
Cut Tread, Iron, Brass or Bronze:
Flat Head or Round Head, 50@50&10%
Fillister Head ..... 40@40&10%
Rolled Thread, F. H. or R. H., Iron ..... 75&10%
F. H. or R. H., Brass, Nos. 8 to 14 ..... 65&10%

Set and Cap—
Set (Iron) ..... 75&10&7½%
Set (Steel), net advance over Iron 25%
Sq. Hd. Cap ..... 70&10&7½%
Hex. Hd. Cap ..... 70&10&7½%
Rd. Hd. Cap ..... 50&7½%
Fillister Hd. Cap ..... 60&7½%

Wood—
List July 23, 1903.
Flat Head, Iron ..... 87½&5@..%
Round Head, Iron ..... 85&5@..%
Flat Head, Brass ..... 80&5@..%
Round Head, Brass ..... 77½&5@..%
Flat Head, Bronze ..... 75&5@..%
Round Head, Bronze ..... 72½&5@..%
Drive Screws ..... 87½&5@..%

Scroll Saws—
See *Saws, Scroll.*

Scythes—
	Per doz.
Plain Grass, Cutting Edge Polished	$6.25@$6.50
Clipper, Bronzed Web	$6.50@$6.75
Solid Steel, Web and Backs Polished	$7.00@$7.25
Bush, Weed and Bramble, Painted	$6.50@$6.75
Grain, Painted, Cutting Edge Polished	$8.25@$8.50
Clipper Grain, Bronze Web	$8.50@$8.75

Seeders, Raisin—
Enterprise ..... 25@30%

Sets— Awl and Tool—
Fray's Tool Handles, Nos. 1, $12; 2, $16; 3, $12 ..... 50%
Millers Falls Adj. Tool Handles, No. 1, $12; No. 4, $12; No. 5, $18 .. 20&10%

Garden Tool Sets—
American Fork & Hoe Co.:
Rake, Shovel and Hoe, ℔ doz. sets, No. 3 P F $7.25

Sets, Nail—
Octagon ..... gro. $3.50@3.75
Buck Bros. 27½%
Mayhew's ..... ℔ gro. $9.00
Snell's Corrugated, Cup Pt. ..... 40&10%
Snell's Knurled, Cup Pt. ..... 40&10%
Victor Knurled, Cup Pt. ..... ℔ gro. $7.50

Rivet—
Regular list ..... 75@75&10%

Saw—
Atkin's:
Criterion 40%
Adjustable 40%
Disston's Star, Monarch and Triumph 30%
Morrill's No. 1 ..... $15.00
Nos. 3 and 4, Cross Cut $20.60
No. 5, Mill $30.00
Nos. 10, 11, 95 ..... $15.60
No. 1 Old Style $10.00
Special $16.25
} 50%
Giant Royal Cross Cut ..... ℔ doz. $7.50
Royal, Hand ..... ℔ doz. $4.50
Taintor Positive ..... ℔ doz. $6.75

Shaving—
Fox Shaving Sets, No. 30 ..... ℔ doz., net, $24.00
Smith & Hemenway Co.'s 75%

Sharpeners, Knife—
Pike Mfg. Co.:
Fast Cut Pocket Knife Hones, ℔ doz. $1.50
Mounted Kitchen Sand Stone, ℔ doz. $1.50
Natural Grit Carving Knife Hones, ℔ doz. $3.00
Quick Cut Emery Carving Knife Hones, ℔ doz. $1.50
Quick Edge Pocket Knife Hones, ℔ doz. $2.50
} 50%

Skate—
Smith & Hemenway Co., Eureka .. 50%

Shaves, Spoke—
Iron ..... doz. $1.25
Wood ..... doz. $2.00
Bailey's (Stanley R. & L. Co.) 45%
Chapin-Stephens Co. ..... 30@30&10%
Goodell's, ℔ doz. $9.00 ..... 15&10%

Shears—
	7	8	9 in.
Cast Iron			
Best	$16.00	18.00	20.00 gro.
Good	$13.00	15.00	17.00 gro.
Cheap	$5.00	6.00	7.00 gro.

Straight Trimmers, &c.:
Best quality Jap ..... 70&10&5%
Best Quality Nickel .. 60&10&5%
Tailors' Shears ..... 40@40&10%
Acme Cast Shears ..... 40@40&5%
Heinisch's Tailor's Shears 10%
National Cutlery Co.'s Nickel Plated, 60&10%; Japan Handles ..... 70&10%
Columbian Cutlery Co.:
Sheep, 1900 list ..... 30&10&5%
Grass ..... 50&10%
Horse or Mule ..... 50&10%
J. Wiss & Sons Co.:
Best Quality Jap'd ..... 60&10%
Best Quality Nickeled ..... 50&10%
Tailors' 25%

Tinners' Snips—
Steel Blades ..... 20&5@20&10%
Steel Laid Blades ..... 50&10%
Acme Cast Snips ..... 40@45&5%
Forged Handles, Steel Blades, Berlin 50%
Heinisch's Snips 40%
Jennings & Griffin Mfg. Co.'s 6½ to 10 in. ..... 33⅓&7½%
National Cutlery Co.'s Forged Steel .. 50%
Niagara Snips 40%
P. S. & W. Forged Handles, 25%; W. R. W. 50%
J. Wiss & Sons Co.:
Wiss Forged Steel 25%

Pruning Shears—
Cronk's Hand Shears 33⅓%
Cronk's Wood Handle Shears 33⅓%
Disston's Combined Pruning Hook and Saw, ℔ doz, $18.00 ..... 25%
Disston's Pruning Hook only, ℔ doz., $12.00 ..... 25%
J. T. Henry Mfg. Co.:
Pruning Shears, all grades 40%
P. S. & W. Co. ..... 40&10%
Columbian Cutlery Co.:
Hedge, Wilcut Brand ..... 60&10%
Lawn and Border, Wilcut Brand, 60&10%

Sheaves—Sliding Door—
Reading 40%
R. & E. list 15%

Sliding Shutter—
Reading list 40%
R. & E. list 15%

Shells—Shells, Empty—
Brass Shells, Empty:
Climax, 10 and 12 gauge ..... 60&5%
Club, Rival, 65&5%; First Quality, 60&5%
Paper Shells, Empty:
New Rapid, 10, 12, 16 and 20 gauge, 25&10%
Climax, 10 and 12 gauge; Acme and Magic, 10, 12, 16 and 20 gauge; Ideal, 10, 12, 16 and 20 gauge; Leader grade ..... 25&5%
Union, League, 10 and 12 gauge, Rival Grade 25%
New Climax, Defiance, 10, 12, 14, 16 and 20 gauge; Climax, 14, 16 and 20 gauge 20%
Challenge, Monarch, 10, 12, 16 and 20 gauge; League, Union, 14, 16 and 20 gauge; Repeater Grade .. 20%

Shells, Loaded—
Loaded with Black Powder .. 40%
Loaded with Smokeless Powder, medium grade ..... 40&5%
Loaded with Smokeless Powder, high grade ..... 40&10&10%
Union Metallic Cartridge Co.:
New Club, Black Powders 40%
Nitro Club, Smokeless Powders .. 40&5%
Arrow, Smokeless Powders .. 40&10&10%
Winchester:
Smokeless Repeater Grade ..... 40&5%
Smokeless Leader Grade ... 40&10&10%
Black Powder 40%

Shingles, Metal— Per Sq.
Edwards Mfg. Co.:	Painted.	Galv.
14 x 20	$4.25	$5.00
10 x 14	4.50	6.25
7 x 10	4.75	6.50

Wheeling Corrugating Co.:
Dixie, 14 x 20 in.	$4.05	$5.05
Dixie, 10 x 14 in.	4.25	5.45
Dixie, 7 x 10 in.	5.25	6.70

Shoes, Horse, Mule, &c.—
F.o.b. Pittsburgh:
Iron ..... per keg. $4.10
Steel ..... per keg. $3.85
Burden's, all sizes ..... ℔ keg $3.90

Shot—
25-lb. bag.
Drop, up to B $1.80
Drop, B and larger 2.05
Buck 2.05
Chilled 2.05
Dust 2.30

Shovels and Spades—
Association List, Nov. 15, 1902 .. 40%
Avery Stamping Co. 40%

Snow Shovels—
Long Handle ..... $2.50@$2.75
Wood and Mall, D Handle, $2.65@$2.90

Sieves and Sifters—
Hunter's Imitation, gro $9.50
Hunter's Genuine, per gro .. $12.00

Sifters, Ash—
Acme Ball Bearing Sales Co., Acme Automatic Ash Sifter, each, $3.25; ℔ doz. $39.00

Sieves, Seamless Metallic
Per dozen.

Mesh	14	16	18	20
Iron Wire	$1.05	1.05	1.10	1.20
Tinned Wire	$1.15	1.15	1.20	1.30

Sieves, Wooden Rim—
Nested, 10, 11 and 12 Inch.
Mesh 18, Nested .... doz. $0.90@0.95
Mesh 20, Nested .... doz. $1.00@1.05
Mesh 24, Nested .... doz. $1.30@1.40

Sinks, Cast Iron—
Painted, Standard list:
12 x 12 to 22 x 36 in 60%
20 x 24 to 24 x 50 in 50%
24 x 60 to 24 x 120 in 30%
Barnes' low list 60%
NOTE.—There is not entire uniformity in lists used by jobbers.

Skeins, Wagon—
Cast Iron ..... 70@75&10%
Steel ..... 40@45%

Slates, School—
Factory Shipments.
"D" Slates ..... 30@30&10%
Eureka, Unexcelled Noiseless .. 60&7 tens.
Victor A. Noiseless .. 60&4 tens &5%

Slaw Cutters—See *Cutters.*

Snaps, Harness—
German ..... 40@40&10%
Covert Mfg. Co.:
Derby, 25%; Yankee, 30&2%; Yankee Roller, 30&2%
High Grade, 40%; Trojan 40%
Jockey 25%

Snaths—
Scythe ..... 50&10@60%

Snips, Tinners—See *Shears.*

Spoons and Forks—
Silver Plated—
Good Quality ..... 50&10@60&5%
Cheap ..... 60@60&10%
International Silver Co:
1847 Rogers Bros. ..... 40&10%
Rogers & Bro., William Rogers' Eagle Brand ..... 50&10%
Anchor, Rogers Brand 60%
Wm. Rogers & Son ..... 60&10%

Miscellaneous
German Silver ..... 60@60&5%

Tinned Iron—
Teas ..... per gro. 50@55¢
Tables ..... per gro. $0.90@$1.00
Atlas Mfg. Co.:
Tea Spoons, ℔ gro. ..... 50¢@55¢
Table Spoons, ℔ gro. ..... $0.90@$1.00

Springs— Door—
Bardsley's Spring and Check 40%
Chicago (Coil) ..... 40&10%
Gem (Coil) 20%
Pullman Door and Gate 10%
Reliance (Coil) ..... 40&10%
Star (Coil) 35%
Torrey's Rod, 39 in. ..... ℔ doz. $1.00

Carriage, Wagon, &c.—
1¼ in. and Wider:	Per 100 lb.
Black	$4.75@$5.00
Half Bright	$4.75@$5.00
Bright	$5.25@$5.50

Painted Seat Springs:
1½ x 2 x 26 .... per pair .. 45@47¢
1½ x 3 x 28 .... per pair .. 68@71¢

Sprinklers, Lawn—
American Foundry & Mfg. Co.: Cactus, 65%; Japanese, 70%; National, ℔ doz. $12.00
Enterprise ..... 25@30%
Philadelphia No. 1, ℔ doz. $12; No. 2, $15; No. 3, $20 ..... 30%

Squares—
Nickel plated .. } List Jan. 5, 1900.
Steel and Iron . } 80&5@80&10%
Rosewood Hdl. Try Square and T-Bevels ..... 60&10&10@70%
Iron Hdl. Try Squares and T-Bevels ..... 40&10@40&10&10%
Disston's Try Squares and Bevels, Rosewood Handle, 60 & 10%; Iron Stock and Bevel 15%

Squeezers, Lemon
Wood, Porcelain Lined:
Cheap ..... doz. $1.00
Good Grade ..... doz. $1.25
Tinned Iron ..... doz. $0.75@1.00
Iron, Porcelain Lined ... doz. $1.75
Victor, ℔ gro. $9.00

Staples—
Barbed Blind ..... 85&5@85&10%
Electricians' ..... 80&10&10@85%
Fence Staples, Polished, $2.05; Galvanized $2.35
Poultry Netting Staples ..... per lb. 3¼@3½¢

Steels, Butchers'—
Dick's 30%
Foster Bros. 30%

Steelyards— .... 30@30&10%

Stocks and Dies—
Blacksmiths' ..... 50@50&10%
Curtis Rev'ble Ratchet Die Stock .. 25%
Derby Screw Plates 25%
Green River 25%
Lightning Screw Plate 25%
Little Giant 25%
Reece's New Screw Plate 25%

Stoners, Cherry—
Enterprise ..... 25@30%

Stones, Axe—
Pike Mfg. Co., Axe Stones (all kinds) 33⅓%

Glass Cutters' Stones—
Pike Mfg. Co., Glass Cutters' Stones and Supplies 40%

Stones, Oil, &c.—
Pike Mfg. Co., 1907 list: ℔
Arkansas St. No. 1, 3 to 5½ in. $2.80
Arkansas St. No. 1, 5½ to 8 in. $3.50
Arkansas Slips No. 1 ..... $1.00
Lily White Washita, 4 to 8 in. 60¢
Rosy Red Washita, 4 to 8 in. 60¢
Washita St., Extra, 4 to 8 in. 50¢
Washita St., No. 1, 4 to 8 in. 40¢
Washita St., No. 2, 4 to 8 in. 25¢
Lily White Slips ..... 90¢
Rosy Red Slips ..... 90¢
Washita Slips, Extra ..... 80¢
Washita Slips, No. 1 ..... 70¢
Washita Slips, No. 2 ..... 40¢
} 33⅓%
India Oil Stones (entire list) .. 33⅓%
Quickcut Emery and Corundum Oil Stone, Double Grit 40%
Quickcut Emery and Corundum Axe Stone, Double Grit 33⅓%
Quickcut Emery Rubbing Bricks .. 40%
Hindostan No. 1, R'g'lar. ℔ 8¢
Hindostan No. 1, Small .. ℔ 10¢
Turkey Oil Stones, Extra, 5 to 8 in. ..... ℔ 80¢
Queer Creek Stones, 4 to 8 in. 20¢
Queer Creek Slips ..... 10¢
Sand Stone ..... 6¢
} 33⅓%

Scythe Stones—
Pike Mfg. Co., 1907 list:
Black Diamond S. S. .. ℔ gro. $12.00
Lamoille S. S. ..... ℔ gro. $11.00
White Mountain S. S. ℔ gro. $9.50
Green Mountain S S. ℔ gro. $7.00
Extra Indian Pond S. S. ℔ gro. $8.00
No. 1 Indian Pond S. S. ℔ gro. $7.50
No. 2 Indian Pond S. S. ℔ gro. $5.00
Leader Red End S. S. ℔ gro. $5.00
Quick Cut Emery .... ℔ gro. $10.00
Pure Corundum ..... ℔ gro. $18.00
Crescent $7.00
Emery Scythe Rifles, 2 Coat. $8.80
Emery Scythe Rifles, 3 Coat. $11.00
Emery Scythe Rifles, 4 Coat. $13.20
} 33⅓%

Balance of 1907 list 33⅓%.
Lectro (Artificial), ℔ gro., $12.00.33⅓%
$12.00 ..... 33⅓%
Lightning (Artificial), ℔ gro., $18.00 ..... 33⅓%

Stoppers, Bottle—
Victor Bottle Stoppers.....℔ gro. $9.00

Stops— Bench—
Millers Falls.....15&10%
Morrill's, ℔ doz., No. 1, $10.00....50%
Morrill's, No. 2, $12.50.....50%

Door—
Chapin-Stephens Co.....50@50&10%

Plane—
Chapin-Stevens Co.....20%

Straps— Box—
Acme Embossed, case lots..20&10&10%
Cary's Universal, case lots...20&10&10%

Stretchers, Carpet—
Cast Iron, Steel Points..doz.55¢
All Steel Socket...doz.$2.00@2.25
Excelsior Stretcher and Tack Hammer Combined, ℔ doz., $6.00....20%

Stuffers, Sausage—
Enterprise Mfg. Co., Stuffers and Lard Presses.....25@25&7½%
National Specialty Co., list Jan. 1, 1902 ..... 30&5%
P., S. & W. Co.....40&10&5%

Sweepers, Carpet—Per doz.—
Bissell Carpet Sweeper Co.:
Cyco Bearing Superba, $36.00; Triumph, $33.00; Parlor Queen, $30.00; Elite, $29.00; Boudoir, $27.00; American Queen, $27.00; Ideal, $25.00; Gold Medal, $24.00; Primier, $24.00; Prize, $24.00; Welcome, $24.00; Grand Rapids, Nickel, $24.00; Japan, $22.00; Crystal, $36.00; Grand, $36.00; Parlor Grand, $48.00; Club, $54.00; Hall, $60.00; Standard Nickel, $22.00; Standard Japan, $20.00; Crown Jewel, Nickel, $21.00; Crown Jewel, Japan, $19.00; Junior, Nickel, $22.00; Junior, Japan, $20.00.

NOTE.—Rebates: 50c per dozen on three dozen lots; $1 per dozen on five-dozen lots; $2 per dozen on ten dozen lots.

Tacks, Finishing Nails, &c.
American Carpet Tacks.90d&.5@—%
American Cut Tacks..90d&25@—%
Swedes' Cut Tacks.L..90d&30@—%
Swedes' Upholsterers'.90d&35@—%
Gimp Tacks.....90d&35@—%
Lace Tacks.....90d&35@—%
Trimmers' Tacks.....90d&30@—%
Looking Glass Tacks.....65@—%
Bill Posters' and Railroad Tacks, 90d&40@—%
Hungarian Nails.....80@—%
Finishing Nails.....70@—%
Trunk and Clout Nails.75d&5@—%

NOTE.—The above prices are for Straight Weights.

Miscellaneous—
Double Pointed Tacks, 90d&6 tens@—%
Se also Nails, Wire.

Tanks, Oil and Gasoline—
Wilson & Friend Co.: Gal.	Gasoline	Oil
30	$2.75	$3.00
60	$3.50	$4.00
110	$5.00	$5.75

Tapes, Measuring—
American Asses' Skin....50@—%
Patent Leather.....25@30&5%
Steel .....33⅓&5%
Chesterman's .....25@25&5%
Keuffel & Esser Co.:
Favorite, Ass Skin.....40&10@50%
Favorite, Duck and Leather.....25&5@25&10%
Metallic and Steel, lower list, 35@35&5%; Pocket, 35@35&5%.
Lufkins:
Asses' Skin.....40&10@50%
Metallic .....30@30&5%
Patent Bend, Leather...25&5@25&10%
Pocket .....40@40&5%
Steel .....33⅓@35%
Wiebusch & Hilger:
Chesterman's Metallic, No. 34L, etc. 25%
Chesterman's Steel, No. 1038L, etc. 35%

Teeth, Harrow—
Steel Harrow Teeth, plain or headed, ¾-inch and larger, per 100 lb.....$2.55@$2.80

Thermometers—
Tin Case, Cabinet, Flange, Dairy, &c.....30@35%

Ties, Bale—Steel Wire—
Single Loop.....82½&10%
Monitor, Cross Head, &c.70&2½%

Tinners' Shears, &c.—
See *Shears, Tinners', &c.*

Tinware—
Stamped, Japanned and Pieced, sold very generally at net prices.

Tire Benders, Upsetters, &c.
See *Benders and Upsetters, Tire.*

Tools—Coopers'—
L. & I. J. White.....20@20&5%

Haying—
Myers' Hay Tools.....50%

Ice Tools—
Gifford-Wood Co.....15%

Miniature—
Smith & Hemenway Co.'s, Davidson, ℔ doz., Nickel Plated, $1.50; Gold Plated.....$2.00

Saw—
Atkins' Cross Cut Saw Tools....35&5%
Simond's Improved.....33⅓%
Simonds' Crescent.....30%

Ship—
L. & I. J. White.....25%

Torches—
Hammers, Engine, ℔ doz.....$4.50

Transom Lifters—
See *Lifters, Transom.*

Traps—Fly—
Balloon, Globe or Acme, doz., $1.15@$1.25; gro.....$11.50@12.00
Harper, Champion or Paragon, doz., $1.25@1.40; gro.$13.00@13.50

Game—
Imitation Oneida.....75@10%
Newhouse .....50&5%
Hawley & Norton.....65&10%
Victor .....75@75&10%
Oneida Community Jump.....70&5%
Stop Thief.....60%
Tree Trap.....60%
Hector .....75@75&10%

Mouse and Rat—
Mouse, Wood, Choker, doz. holes, 12¢
Mouse, Round or Square Wire, doz. .85@90¢
Marty French Rat and Mouse Traps (Genuine), ℔ doz.:

	Crate lots.	Small lots.
No. 1, Rat.....	$11.50	$14.50
No. 3, Rat.....	$5.75	$6.50
No. 3½, Rat.....	$4.70	$5.25
No. 5, Mouse.....	$2.25	$3.00

Animal Trap Co.:
Out o' Sight, Mouse, ℔ doz.....$0.60
Out o' Sight, Rat, ℔ doz..... 1.20
Easy Set, Mouse, ℔ doz..... .35
Easy Set, Rat, ℔ doz..... .85
Out o' Sight Chockers, ℔ doz. holes ..... .12
Out o' Sight, Tin, 5-hole, ℔ doz. traps ..... .75

Trowels—
Disston Brick and Pointing.....25%
Disston Plastering.....20%
Disston "Standard Brand" and Garden Trowels.....30%
Kohler's Steel Garden Trowels, ℔ gro., 5 in., $4.80; 6 in., $6.00.
Never-Break, Forged Steel Garden Trowels, in bulk, net ℔ gro. $5.50
In 1 doz. boxes.....℔ gro. $6.00
Woodrough & McParlin, Plastering.25%

Trucks, Warehouse, &c.—
B. & L. Block Co.:
New York Pattern.....50&10%
Western Pattern.....60&10%
Handy Trucks.....℔ doz. $16.00
Grocery .....℔ doz $15.00
McKinney Trucks.....each, net $10.00
Model Stove Trucks.....℔ doz $18.50

Tubs, Wash—
M'f'gr's list, price per gross.

No.	0	1	2	3
Galvanized.	$67	$79	$89	$99

10&7½ &5&5%

Twine, Miscellaneous—
Flax Twine:
No. 9, ¼ and ½-lb. Balls..21@23¢
No. 12, ¼ and ½-lb. Balls..19@21¢
No. 18, ¼ and ½-lb. Balls..16@18¢
No. 24, ¼ and ½-lb. Balls. 15½@17½¢
No. 36, ¼ and ½-lb. Balls..15@17¢
Chalk Line, Cotton ¼-lb. Balls .....2½@29¢
Cotton Mops, 6, 9, 12 and 15 lb to doz.....8½@19¢
Cotton Wrapping, 5 Balls to lb., according to quality..13½@19¢
American 3-Ply Hemp, ½-lb. Balls.....13½@15¢
American 3-Ply Hemp, 1-lb Balls .....13¼@16¢
India, 3-Ply Hemp, 1½-lb. Balls, Balls (Spring Twine)...7½@9¢
India 3-Ply Hemp, 1-lb. Balls 7¼@9¢
India 3-Ply Hemp, 1½-lb. Balls, 7@8½¢
2, 3, 4 and 5-Ply Jute, 1½-lb. Balls .....9@1'¢
Mason Line, Linen, ½-lb. Bls.47¢
No. 264 Mattress, ¼ and ½ lb. Balls, according to quality. 30@60¢
Wool, 3 to 6 ply....B 6¢; A 7½¢

Vises—
Solid Box.....50&5@50&10&5%

Parallel—
Athol Machine Co.:
Simpson's Adjustable.....40%
Standard 40%
Amateur 25%
Columbian Hdw. Co., 40&5%; Slide 65%
Fisher & Norris Double Screw, net, each Nos. 2, $10.50; 3, $16.00; 4, $20.50; 5, $27.60; 6, $32.00.
Fulton Mach. & Vise Co.:
F. & R. Double Swivel Machinists' 40%
Star, Solid Jaw, Machinists'.....40%
Hollands':
Machinists' .....40@40&5%
Keystone .....65&5@70%
Lewis Tool Co.:
Adjustable Jaw.....30%
Monarch, 50%; Solid Jaw.....50%
Massey Vise Co.:
Clincher 40%
Parallel Bar.....15%
Perfect, 25%; Lightning Grip.....15%
Merrill's 25%
Millers Falls Oval Slide Pattern.60&10%
Parker's:
Victor, 20@25%; Regulars....20@25%
Vulcan's .....40@45%
Combination Pipe.....55@60%
Prentiss .....20@25%
Rock Island.....25%
Snediker's X. L.....33⅓%
Stephens' 33⅓%

Saw Filers
Disston's D 3 Clamp and Guide, ℔ doz., $24.00, 30%; Clamps.....30%
Perfection Saw Clamps, ℔ doz....$4.50
Reading 60%

Wood Workers—
Fulton Mach. & Vise Co.:
F. & R. Double Swivel Coachman's 40%
Star Solid Jaw Woodworkers'....60%
Massey Vise Co.:
Lightning Grip, 15%; Perfect....15%
Wyman & Gordon's Quick Action, 6 in., $6.00; 9 in., $7.00; 14 in., $8.00.

Miscellaneous—
Fulton Machine & Vise Co., Combination Pipe.....70%
Holland's Combination Pipe..60@60&5%
Massey's Quick Action Pipe.....40%
Parker's Combination Pipe:
87 Series, 60%; 187 Series, 60&5%; No. 870, 40%.
Rock Island Pipe.....25%

Wads— *Price per M.*
B. E., 11 up.....60¢
B. E., 9 and 10.....70¢
B. E., 8.....80¢
B. E., 7.....80¢
P. E., 11 up.....$1.00
P. E., 9 and 10..... 1.25
P. E., 8..... 1.50
P. E., 7..... 1.50
Ely's B. E., 11 and larger.$1.70@1.75
Ely's P. E., 12 to 20....$3.00@3.25
Dis. 15%

Ware, Hollow—Cast Iron, Hollow—
Stove Hollow Ware:
Enameled .....45&10%
Ground .....50&5%
Plain or Unground.....60%
Country Hollow Ware, per 100 lbs .....$2.75@$3.00
White Enameled Ware:
Maslin Kettles.....65&10%
Covered Wares:
Tinned and Turned.....35&10%
Enameled .....45&10%
See also *Pots, Glue.*

Enameled—
Agate Nickel Steel Ware.....33⅓%
El-an-ge .....60&10%
Iron Clad Ware.....70&10%
Lava and Volcanic, Enameled..40&10%

Tea Kettles—
Galvanized Tea Kettles:

Inch	6	7	8	9
Each	45¢	50¢	55¢	65¢

Steel Hollow Ware—
Avery Stamping Co.:
Never-Break Spiders and Griddles .....65&10%
Steel Kettles, Maslins Scotch Bowls, Tin'd.....60%
Steel Stew Pans, Stew Pots, etc., Porcelained 50%
Cleveland Stamping & Tool Co.:
Solid Steel Spiders and Griddles .....65&5%
Solid Steel Kettles.....60&5%

Warmers, Foot—
Pike Mfg. Co., Soapstone....40@40&10%

Washboards—
No.	℔ doz.
800—Brass King, Single Surface, Open Back.....	$2.80
862—White Hen, Spiral Grimp Glass	$3.35
964—Royal Blue Enamel, Single Surface, Ventilated Back.....	$3.35
172—Our Best, Single Zinc, Soap Drainer	$3.35
722—Soap Saver, Single Zinc, Iron Top	$3.35
100—Northern Queen, Single Zinc, Perforated, Open Back.....	$3.00
134—Universal, Single Zinc, Extra Family Size, Ventilated Back....	$2.80
760—Banner Globe, Single Zinc, Ventilated Back.....	$2.25
57—Peerless, Double Zinc, Spring Protector	$3.70
56—Red Cross, Double Zinc, Swing Protector	$3.60
17—North Star, Solid Zinc, Swing Protector	$3.60
797—Jewel, Single Zinc, Pail Size.	$1.25

Washers—Leather, Axle—
Solid .....90@90&10%
Patent .....90@90&5%
Coil: ⅞ 1 1¼ 1¼ inch.
9¢ 10¢ 11¢ 14¢ per box.

Iron or Steel—
Size bolt.... 5-16 ⅜ ½ ⅝ ¾
Washers....$4.99 4.00 2.70 2.50 2.30
The above prices are based on $6.50 off list.
In lots less than one keg add ½¢ per lb.; 5-lb. boxes add ½¢ to list.

Avery Stamping Co.:
Standard, in 200 lb kegs, $6.00 ℔ 100 lb. discount; in 100 lb kegs add 10¢ net ℔ 100 lb; in 5 or 10 lb boxes, add 50¢ net ℔ 100 lb; in 1 lb boxes, add $1.00 net ℔ 100 lb.

Cast Washers—
Over ½-inch, barrel lots, per lb. 1½@1¾¢

Wedges—
Oil Finish.....lb., 2¼@2¾¢

Weights—Hitching—
Covert Mfg. Co.....30&2%

Sash—
Per net ton, f.o.b. factory:
Eastern District.....$20.00@—
Western and Central Districts .....$20.00@—

Wheels, Corundum and Emery—
Pike Mfg. Co., Corundum, 65%; Emery 75%

Well—
8-in., $2.00; 10-in., $2.30; 12-in., $3.00; 14-in., $4.45.

Wire and Wire Goods—
Bright and Annealed:
6 to 9.....72&10&7½%
10 to 18.....72½&10&10%
19 to 26.....75&10&10&2½%
27 to 36.....77½&7½%
Galvanized:
6 to 9.....72½&10%
10 to 14.....72½&10&5%
15 to 16.....72½&10&5%
17 to 18.....72½%
19 to 26.....70&5&2½%
27 to 36.....65&10&10%
Coppered:
6 to 9.....65&10&10%
10 to 14.....70&10&5%
15 to 18.....65&10&10&10%
19 to 26.....70&5&2½%
27 to 36.....72½&10&2½%
Tinned:
6 to 18.....67½&10&10%
Brass .....15½¢ lb., base
Copper .....15¼¢ lb., base
Cast Steel Wire.....50%

Spooled Wire—
Annealed and Tinned.75@75&10%
Brass and Copper....70@70&10%
Retailers' Assortments, per box. $1.90@$2.10
Wire Clothes Line, See Lines.
Wire Picture Cord, see Cord.

Bright Wire Goods—
Steel Wire Goods.....90&40%
Brass Wire Goods, 90&40@90&40&10%
Brass Cup and Shoulder Hooks, 85&10%

Wire Cloth and Netting—
Galvanized Poultry Netting, 80&10@80&10&5%
Screen Cloth, 12 Mesh, Per 100 sq. ft.: Painted, $1.30; Galvanized, $1.90; Bronze, $6.50.
Standard Galv. Hardware Grade: 100 ft. rolls, 2½ to 48 in. wide, Per 100 sq. ft.
Nos. 2, 2½ and 3 Mesh, $2.75@$3.00
Nos. 4 and 5 Mesh..$3.00@$3.25
No. 6 Mesh.....$3.25@$3.50
Nos. 7 and 8 Mesh..$3.75@$4.00

Wire, Barb—See *Trade Report*

Wrenches—
Agricultural, 80&10&5@80&10&10%
Alligator or Crocodile..70&10@75%
Baxter Pattern S Wrenches, 70&5@70&10%
Drop Forged S.....45@45&5%
Acme .....60&10%
Alligator Pattern, 70%; Bull Dog..70%
Bemis & Call's:
Adjustable S, 40&5%; Adjustable S Pipe, 40&5%; Briggs Pattern, 40%; Combination Bright, 50%.
Steel Handle Nut.....50&5%
Combination Black.....50&5%
Merrick Pattern.....50&5%
Boardman's 40%
Coes' Genuine Knife Hdl...40&10&5&5%
Coes' Genuine Steel Hdl...40&10&5&5%
Coes' Genuine Key Model..40&10&5&5%
Coes' Genuine Hammer Handle.....40&10&5&5%
Coes' "Mechanics'"...40&10&10&5&5%
Donohue's Engineer.....40&10%
Eagle 70%
Gem Pocket.....30%
Hercules 70%
W. & B. Machinist:
Case lots.....50&10%
Less than case lots.....50%
W. & B. Railroad Special:
Case lots.....50%
Less than case lots.....40&10&5%
Solid Handles, P., S. & W..50&10%; full cases.....50&10&5%
Standard Nipple Mfg. Co.:
Duplex Chain.....50%
Uwanta Wrench Co.:
Uwanta Special, Iron Handle.....40&10&5%
Other Wrenches.....50%
Vulcan and Agrippa Chain.....50%
Whitaker Machinists'.....50&10%
Wizard Adjustable Ratchet.....50%

Fruit Jar—
Beni, P. Forbes, Triumph, ℔ gro.. $7.50; per doz.....$0.90

Wrought Goods—
Staples, Hooks, &c., list March 17, '82.....90@—%

Zinc— *(Cask lots at mill.)*
Sheet.....per 100 lb., $7.00